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**Actions for the further implementation of the Programme
of Action of the International Conference on Population
and Development**

**Strengthening the demographic evidence base for the
post-2015 development agenda****Report of the Secretary-General***Summary*

In its decision 2015/101, the Commission on Population and Development decided that the special theme for its forty-ninth session would be "Strengthening the demographic evidence base for the post-2015 development agenda".

In September 2015, the General Assembly adopted the 2030 Agenda for Sustainable Development, which includes 17 ambitious goals to ensure a sustainable future for humanity. The Sustainable Development Goals, together with 169 targets that further specify the achievements expected, will guide the actions of Governments and the development community through 2030. Monitoring progress towards the achievement of the goals and targets will be crucial to guiding action. Reliable and timely demographic information is essential for effective monitoring.

The present report, prepared by the Population Division of the Department of Economic and Social Affairs, reviews the current status of demographic evidence and its capacity to support monitoring of the Sustainable Development Goals. It focuses on the core systems generating demographic data and describes how the "data revolution" has already improved their performance and the potential for accelerating such improvements.

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In addition, the report underscores that open access to anonymized microdata and routine use of geo-referencing in data collection are necessary to expand the use of demographic data. Geo-referencing makes possible the integration of diverse datasets and facilitates disaggregation and the incorporation of big data in analyses and modelling.

The report also highlights the role of institutions producing consistent and comparable sets of demographic indicators essential for monitoring the Sustainable Development Goals globally.

I. Introduction

1. The 2030 Agenda for Sustainable Development, adopted by the General Assembly in September 2015, provides an ambitious set of goals whose achievement will set humanity on a path towards sustainability. Progress made toward achieving the Agenda's 17 Sustainable Development Goals and 169 targets will need to be monitored closely to provide timely guidance for effective action. The data requirements partially overlap with, and in some cases go beyond, those needed to monitor the Programme of Action of the International Conference on Population and Development¹ and the regional commitments for the implementation of the Programme of Action.

2. The process of establishing indicators to measure progress in the Sustainable Development Goals is well under way. Timely and reliable demographic data will therefore be necessary both to calculate indicators and to provide weighting factors to obtain regional or global estimates. Furthermore, the emphasis of the 2030 Agenda on inclusiveness and the need to leave no one behind implies that demographic data, in particular, will have to be available for specific population groups, such as children, women of reproductive age, youth or the elderly, and by location, including for small areas within countries.

3. The increased demands that monitoring the Sustainable Development Goals will put on national statistical systems and other institutions generating relevant information have been the subject of increased attention. The numerous initiatives to improve crucial statistical systems and exploiting advances and innovation in information and communications technology (ICT) to improve the evidence base, particularly in developing countries, have been the focus of the Independent Expert Advisory Group on a Data Revolution for Sustainable Development² and the Partnership in Statistics for Development in the 21st Century (PARIS21). Furthermore, in its *Data for Development: An Action Plan to Finance the Data Revolution for Sustainable Development*, the United Nations Sustainable Development Solutions Network identifies eight data "instruments" as necessary for monitoring the Sustainable Development Goals, three of which — censuses, civil registration and vital statistics, and household surveys — are core instruments for the generation of demographic information.

4. Improving the reliability, timeliness and accessibility of demographic data needs to be a central focus of any effort to strengthen statistical systems for monitoring the Sustainable Development Goals. The present report reviews the current status of demographic data and suggests strategies to improve the core instruments used to generate them. It focuses mainly on data permitting the estimation of population dynamics — population counts, births, deaths and migrants — and on data about the proximate determinants of fertility.

5. Improving data-generation systems, however, is only part of a comprehensive strategy to improve the demographic evidence base. It is also crucial to foster and strengthen initiatives to compile, harmonize, consolidate, disseminate and analyse the data. Open-data policies that allow researchers and decision makers to access

¹ Including chapter XII, covering data and research requirements, and recommended actions.

² See *A World That Counts*, available from www.undatarevolution.org/report/#nav-mobile, accessed on 20 November 2015.

microdata³ with safeguards to ensure confidentiality are essential to promote in-depth analysis and utilization of rich datasets. Costly data-generation projects often have little impact because the data produced remain inaccessible to analysts.

6. A major innovation that should become routine practice in data generation is geo-referencing. The integration of diverse data sources via geo-referencing can produce vastly enriched evidence linking demography with other relevant processes. For instance, studying the effects of climate change on people requires access to integrated data on population and the environment. Programme planning, implementation and service delivery can also greatly benefit from geo-referenced information, especially to monitor and guide the reduction of subnational inequities in service delivery and health status. Such integrated data are necessary to guide action promoting the well-being of both people and the planet.

II. Core sources of demographic data

A. Population censuses

7. In most countries, population and housing censuses are the only source of overall population numbers by age and sex, marital status, educational attainment, occupation, ethnicity, migrant status, household composition, housing characteristics and other relevant sociodemographic characteristics. Because censuses aim to enumerate all people in a country at a particular time, they yield data for small groups and small areas that other data sources cannot produce. Censuses are therefore essential to assess whether any group is being left behind in the development process.

8. Most countries⁴ conduct a population census at least once every decade. During the period 2005-2014, there were censuses to count the populations of 214 countries or areas, covering 93 per cent of the world's population.⁵ Only 20 countries did not conduct a census: 8 in Africa, 8 in Asia, 2 in Europe and 2 in Latin America and the Caribbean. This represents an improvement with respect to the prior rounds of 1995-2004 and 1985-1994, in which censuses were conducted for only 206 countries or areas. Nevertheless, in preparing the 2015 revision of population estimates, the Population Division found that for 17 per cent of countries in Africa, 8 per cent of those in Asia and Latin America and the Caribbean and 4 per cent of those in Oceania, the most recent population counts available referred to years prior to 2005.

9. Population censuses are major operations conducted at lengthy intervals. Censuses typically start by updating the cartography of a country's inhabited areas and thus provide an excellent means of geo-referencing data on the location of people and households. However, censuses are not meant to monitor change continuously. Innovative approaches to gather census-type data at shorter intervals are being used by some countries. Multi-modal approaches rely on continuous or ad hoc surveys to supplement censuses and registers. For example, the Netherlands

³ "Microdata" refers to the anonymized dataset(s) containing the information collected about each observation unit (e.g. housing unit, household or person).

⁴ In the present report, the term "countries" includes areas lacking an independent political status and that are generally a portion of one or more independent States.

⁵ See http://unstats.un.org/unsd/demographic/sources/census/2010_PHC/censusclockmore.htm.

conducted a virtual census by integrating data from registers and multipurpose surveys, while the United States of America has used the annual American Community Survey to update the results of its 2010 census. France has been conducting a "rolling census" since 2005, consisting of repeated surveys that, over time, cover the whole population. Countries of the Gulf Cooperation Council are considering options to conduct register-based censuses.

10. ICT innovations can improve every stage of census operations including cartographic updates, logistics monitoring, questionnaire design and data collection, coding, storage, analysis and dissemination. However, countries vary widely in their use of ICT. Most countries still rely on face-to-face interviews and paper questionnaires to gather census data, but scanning and imaging technology is commonly employed to digitize information. Computer editing and processing are virtually universal and the use of the Global Positioning System (GPS) to produce geo-referenced data has expanded.

11. The use of ICT to disseminate and provide access to census information is far from universal. Responses from 121 national statistical offices that had conducted a census by 2011 showed that just 28 per cent of them would disseminate results via static web pages and even fewer (14 per cent) would do so through interactive online databases. Paper publications were the main dissemination medium for over half of the offices responding.⁶ When census information is disseminated only via paper publications, the type and amount of information accessible to users is limited. A positive development in this regard is the growing number of national statistical offices that have been disseminating selected national and subnational summary indicators through interactive desktop or online platforms, such as CensusInfo, supported by the Statistics Division, the United Nations Children's Fund (UNICEF) and the United Nations Population Fund (UNFPA), and PC-Axis, supported by Statistics Sweden.

12. But to utilize fully the rich data produced by censuses, availability of the microdata is required. Software designed specifically to make microdata accessible via online interactive databases with safeguards to maintain confidentiality should be used to disseminate census results. To that end, the Statistics Division, in partnership with UNICEF and UNFPA, has developed CensusInfo, software to disseminate census results at any relevant geographical level.⁷ CELADE, the Latin American and Caribbean Demographic Centre — Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC), has developed REDATAM (retrieval of data for small areas by microcomputer), software that allows the processing and visualization of census information and the development of applications for analysis. REDATAM has been used to disseminate census microdata online by at least 32 countries, 24 of which provide access to census information collected since 2005. Those 32 countries comprise 17 in Latin America, 6 in the Caribbean, 7 in Africa and 2 each in Asia and Oceania.⁸ The Integrated Public Use Microdata Series (IPUMS) International Online Data Analysis System⁹ currently facilitates statistical analysis of integrated, high-precision census

⁶ United States Census Bureau, "Mid-Decade Assessment of the United Nations 2010 World Population and Housing Census Program" (ESA/STAT/AC.277/1), 2013.

⁷ Available from www.censusinfo.net.

⁸ See www.cepal.org/cgi-bin/getprod.asp?xml=/redatam/noticias/paginas/5/14185/P14185.xml&xml=/redatam/tpl/p18f.xsl&base=/redatam/tpl/top-bottom.xsl.

⁹ Available from <https://international.ipums.org/international/sda.shtml>.

samples for 80 countries in roughly equal proportions by continent. The number of countries and censuses included in this system has been increasing over time.

13. Although national statistical offices report that use of ICT improves data quality and timeliness, they also acknowledge that major barriers to adopting ICT innovations are a lack of trained personnel and cost. Flexibility and more widespread adoption of technological innovations will be essential to improve census taking in the 2020 round. Data collection can be enhanced by using hand-held devices for direct data input, thereby reducing data-capture costs. GPS, geographic information systems (GIS) and new mapping techniques will likely improve address listing and geo-referencing. Data dissemination using online databases and specialized software will expand the user base and allow a deeper exploitation of the data. These developments should be accompanied by adopting appropriate open-data policies and adequate funding and training of the required personnel in the use of new technologies.

14. At the international level, the Statistical Commission sets standards and provides guidance for conducting censuses. In preparation for the 2020 round, the Commission adopted in 2015 the third revision of *Principles and Recommendations for Population and Housing Censuses*,¹⁰ which makes recommendations on census content, presents alternative methodologies for census taking and discusses technologies to improve census operations. At the regional level, the regional commissions are in charge of complementing global recommendations by providing regional guidance.

B. Population registers

15. A population register is a system that records on a continuous basis selected information about each resident of a country. Both the organization and the operation of a population register have a legal basis. While the main purpose of population registration is administrative, the register can be the source of up-to-date statistics on the size, characteristics and location of the population and of its components of change, namely births, deaths and changes of residence, which allow the estimation of internal and international migration. When population registers are centralized, that is, when the information they produce for a whole country is maintained together, they permit ascertaining the status of a population and its sociodemographic structure at any time and for any location, including small areas. Central registers also permit studying families and their living arrangements and performing longitudinal analysis of demographic events in the lives of individuals. For these reasons, well-maintained, computerized population registers represent the best source of demographic data.

16. However, few countries maintain population registers. They are most common in Europe. At least 23 European countries have population registers and in 20 of them the registers are centralized or in the process of being centralized.¹¹ In Asia, at least seven countries have some form of population registration but do not use the registers to generate demographic statistics.

¹⁰ Available from http://unstats.un.org/unsd/demographic/meetings/egm/NewYork/2014/P&R_Revision3.pdf.

¹¹ Michel Poulain and Anne Herm, "Central population registers as a source of demographic statistics in Europe", *Population* (English Edition), vol. 68, No. 2 (2013), pp. 183-212.

17. A number of European countries with registers do not conduct conventional population censuses. Austria, Denmark, Finland, Iceland, Norway and Sweden produce census-like data entirely from linked administrative databases that include the central population register. Belgium, Germany, the Netherlands and Slovenia derive population data from population registers and use surveys to gather supplementary information. The Czech Republic, Estonia, Italy, Latvia, Lithuania, Poland, Spain and Switzerland conduct censuses with preprinted information derived from the register to update such information.

18. One shortcoming of population registers is that they do not always record all changes of residence, particularly those of foreigners who leave the country, which can affect significantly the accuracy of population counts.

19. Nonetheless, given the vast potential that population registers have to improve national demographic statistics, countries that already have a population registration system should consider using the register to generate demographic statistics. In those countries, evaluating the operation of the existing register and developing a strategy to correct any deficiencies detected would be a first step in making it a viable statistical source. If deficiencies in coverage are detected, such as registering departures and undocumented migrants, a campaign to inform people about the benefits of registering and to prompt them to act will be required. India provides an interesting example: it is in the process of establishing a state-of-the-art registration system under which every resident is issued an identity card with a unique identification number and embedded biometric information. A major campaign to inform and persuade the population to register has been key to its success.

20. Many countries maintain administrative registers to record the entry, residence and employment of the foreign population. Given the paucity of data on international migration, the tabulation and publication of data on applications for visa, residence authorizations and labour permits is critically important.

C. Civil registration and vital statistics

21. Civil registration is an administrative system that records vital events — births, deaths, marriages and divorces — as they occur. It issues legal documents that establish the legal identity and family relationships of individuals. To be effective, civil registration has to be compulsory, universal, continuous, permanent and confidential. The registration records should be archived and maintained so that they can be retrieved when needed. Coordination among civil registrars and health and statistical authorities is needed to ensure the timely production of vital statistics.

22. Although complete vital statistics are essential for demographic accounting, many countries lack them. Among 234 countries or areas, only 60 per cent register at least 90 per cent of births and just 56 per cent register at least 90 per cent of deaths. Furthermore, only 39 per cent have reasonably complete data on causes of death and 41 per cent lack data on most causes. In Africa, 71 per cent of countries fail to report vital statistics. Globally, between 2005 and 2009 and between 2010 and 2014 the number of countries failing to report vital statistics to the Statistics Division increased from 27 per cent to 33 per cent for births and from 26 per cent to 34 per cent for deaths. The absence of timely reporting impairs global monitoring of vital statistics.

23. Yet, Demographic and Health Surveys and Multiple Indicator Cluster Surveys show that between 2004 and 2014, the percentage of children under five who were registered increased from 58 to 65 per cent. Despite this improvement, in 2015, 230 million children under five lacked a birth certificate, including 85 million in Africa and 135 million in Asia and Oceania. The Sustainable Development Goals call for the registration of all births so that every person has a legal identity. Governments should ensure that the capacity to produce vital statistics expands in parallel to the expansion of birth registration.

24. The Convention on the Rights of the Child, which entered into force in 1990, establishes in article 7 that the child shall be registered immediately after birth. UNICEF has therefore been fostering the expansion of birth registration for over two decades. However, only recently has the urgent need for reliable data on the mortality of mothers and children focused attention on improving systems for civil registration and vital statistics. In 2011, the Commission on Information and Accountability for Women's and Children's Health called on Governments to establish civil registration and vital statistics systems, recognizing such systems as the most efficient source of data to monitor child and maternal mortality.¹² With the support of the Commission, 51 of the 75 priority countries have completed assessments of their civil registration and vital statistics systems and 28 of them have developed multisectoral plans of action.

25. In parallel, development partners are aligning forces to support development of civil registration and vital statistics systems in priority countries. The World Bank estimates that over a decade \$3.8 billion will be necessary to establish or improve civil registration and vital statistics in 73 priority countries (China and India are excluded from this estimate).¹³ Most of these investments are expected to come from national budgets, but donors and development partners would have to support the early stages of scale-up and cover a financing gap estimated at \$199 million per year over a decade.

26. The Government of Canada has already prioritized funding for civil registration and vital statistics within its \$3.5 billion phase I Muskoka commitment.¹⁴ In March 2015, Bloomberg Philanthropies, in collaboration with the Department of Foreign Affairs and Trade of Australia, established a global partnership that will bring together key expertise in the development of civil registration and vital statistics to improve vital statistics in 20 developing countries. At the World Bank, the Global Financing Facility in support of Every Woman, Every Child will provide results-focused financing while supporting the systems needed to monitor progress and measure results, in particular civil registration and vital statistics.

27. At the regional level, meetings at the ministerial level have committed to strengthen civil registration and vital statistics, while the regional commissions are providing technical support, including for the implementation of action plans adopted by the Economic Commission for Africa and the Economic and Social Commission for Asia and the Pacific. Their task should be guided by revision 3 of

¹² Commission on Information and Accountability for Women's and Children's Health, *Keeping Promises, Measuring Results* (Geneva, World Health Organization, 2012).

¹³ World Bank, *Global Civil Registration and Vital Statistics: Scaling-Up Investment Plan 2014-2025*, 2014.

¹⁴ See <http://mnch.international.gc.ca/en/topics/leadership-ongoing.html>.

Principles and Recommendations for a Vital Statistics System,¹⁵ approved by the Statistical Commission in 2014. Furthermore, the World Health Organization (WHO) has been promoting innovative approaches to improve mortality statistics within civil registration and vital statistics¹⁶ and has developed technical guidance on the collection, analysis and use of mortality statistics, focusing on the implementation of the International Classification of Diseases and on the use of verbal autopsy techniques to generate information on causes of death at the community level.¹⁷

28. These initiatives are long overdue. Only a third of deaths worldwide are registered and, in some countries, nearly half are attributed to generic causes that are uninformative for public policy.¹⁸ Although over the past decade some civil registration and vital statistics systems have improved, others have deteriorated or ceased producing data. Periodic assessments of the performance of the civil registration and vital statistics system, including at the subnational level, should be standard practice.

29. Improving civil registration and vital statistics systems goes beyond technical issues. Clarity about the responsibilities of the different government units involved and a streamlined process leading from registration to statistics are equally important. Close collaboration between authorities responsible for civil registration and vital statistics and the health system is essential. Registration is most efficient when it is done where births and deaths occur, including in clinics or hospitals. Burial services should be required to request death certificates. Registration fees or requirements for prior documentation from those registering an event are disincentives that should be eliminated or minimized.

30. A concerted and serious effort to expand and improve civil registration and vital statistics systems, particularly in low-income and lower-middle-income countries, is a priority. Few would doubt that reducing premature death from chronic and degenerative diseases is desirable. Yet it is precisely those countries where the prevalence of such diseases is expected to increase that lack information about actual trends. A key motivation to improve civil registration and vital statistics systems is the concern about persistently high maternal and child mortality, but reliable information on mortality at all ages is essential to monitor progress towards achieving Sustainable Development Goal 3 on health.

D. Household surveys

31. Household surveys, when based on representative probabilistic samples drawn from a frame that covers the whole population (such as a census), are the fourth key instrument for the generation of demographic data. Most household surveys are conducted face-to-face by trained interviewers. Household surveys collect detailed information that cannot be reliably obtained using other data collection instruments.

¹⁵ United Nations publication, Sales No. E.13.XVII.10.

¹⁶ World Health Organization, *Improving Mortality Statistics through Civil Registration and Vital Statistics Systems: Strategies for Country and Partner Support* (Geneva, 2014).

¹⁷ See <http://www.who.int/healthinfo/statistics/verbalautopsystandards/en/>.

¹⁸ Alan Lopez and Philip Setel, "Better health intelligence: a new era for civil registration and vital statistics?", *BMC Medicine*, vol. 13, No. 73 (2015), pp. 1-4.

32. In developing countries, demographic household surveys began to be used systematically in the 1970s to gather information about fertility and its determinants, including contraceptive use. In countries lacking reliable vital statistics, household surveys are the main source of data to estimate fertility and child mortality and, consequently, demographic surveys tend to be more common in those countries. Although surveys have also yielded data to estimate maternal and adult mortality at the national level, or migration across geographic units, small sample sizes and reporting errors often produce unreliable estimates of these relatively rare events.

33. Household surveys are conducted more frequently than censuses, but the frequency of those gathering demographic data varies considerably among countries. The sources of the most recent estimates of contraceptive prevalence show that 74 per cent of the countries in Africa carried out a survey during the period 2010-2014, compared with 57 per cent in Asia, 27 per cent in Latin America and the Caribbean, 10 per cent in developing Oceania and 19 per cent in developed countries.

34. International survey programmes have been major drivers of increased survey taking. In the 1970s, the World Fertility Survey programme set the standards for demographic surveys. Financed by UNFPA, the United States Agency for International Development (USAID) and the Overseas Development Administration of the United Kingdom of Great Britain and Northern Ireland, the programme started in 1972 and had conducted 59 surveys when it ended in 1984, including 42 in developing countries. The programme's secretariat collaborated with national institutions to conduct and analyse the surveys in order to build national capacity. By producing model questionnaires with modules on specific topics and ensuring centralized data processing, the World Fertility Survey achieved harmonization of concepts and comparability of results across countries. Microdata from surveys for developing countries are still accessible in digital form.¹⁹

35. From 1977 to 1985, USAID funded the contraceptive prevalence surveys aimed at gathering information on contraceptive use by method and (public or private) source of services and supplies in order to evaluate and assist in managing family planning programmes. Forty-two contraceptive prevalence surveys were conducted over that period.

36. The World Fertility Surveys and contraceptive prevalence surveys set the stage for the next generation of international survey programmes. In 1984, USAID funded the first phase of the Demographic and Health Surveys, a programme still in operation that has provided essential data to monitor the Millennium Development Goals.

37. In 1995, UNICEF launched a second major survey programme to monitor the implementation of the Convention on the Rights of the Child and the Millennium Development Goals, the Multiple Indicator Cluster Surveys. Although collecting mainly data relevant to monitor the health and well-being of women and children, the surveys also gather information on other topics. Multiple Indicator Cluster Surveys belonging to the recently completed fifth round collected data to measure 130 indicators. By early 2015, 271 surveys had been conducted in 108 countries and microdata from 152 were accessible online. UNICEF has developed a

¹⁹ Available from the Office of Population Research data archive, at <http://opr.princeton.edu/archive/wfs/>.

comprehensive set of tools, including questionnaire modules, to guide national survey teams through every step of the survey process, including planning, survey design, training of field teams, and data collection, processing, documentation, analysis and dissemination.²⁰

38. The Demographic and Health Survey programme has also ensured comparability of data over time and across countries through standardization of modular questionnaires, data collection procedures and data processing. By the end of 2014, 252 standard surveys had been conducted in 89 countries or areas. Whereas the Demographic and Health Survey programme largely inherited the innovative approaches pioneered and tested by the World Fertility Survey with regard to demographic data collection, it has been innovating in the collection of health data. In 1995, anaemia testing became a standard component of the Demographic and Health Survey and since then, 20 other biomarkers have been added to the surveys in over 50 countries, including HIV and malaria testing. To address specific needs, the programme has developed specialized surveys on a range of topics, including surveys that provide an overview of a country's health service delivery.

39. The Demographic and Health Survey was the first survey programme to use online interactive databases routinely to provide access to microdata. Furthermore, it pioneered the systematic use of geo-referencing. In most of the recent surveys, groupings of households, denominated "clusters", are geo-referenced using GPS, usually during the survey sample listing process. To maintain respondent confidentiality, GPS latitude/longitude positions are randomly displaced while ensuring that they remain within the area where each cluster is located. Therefore, survey data can be integrated with other geo-referenced datasets, thereby leveraging their usefulness.

40. Some Demographic and Health Surveys and Multiple Indicator Cluster Surveys have been conducted via computer-assisted personal interviewing using tablets or laptops. The use of such devices can save time and enhance accuracy, but interviewers must be skilled in using the devices and sufficient technical support must be available to ensure quality control. Further innovation in this area is at the core of the survey project entitled "Performance Monitoring and Accountability 2020 (PMA2020)", whose objective is to monitor progress towards providing family planning to an additional 120 million women who need it by 2020. The project is currently active in nine countries where over 1,200 female resident interviewers have been trained to conduct interviews at households and health service delivery points, entering the data into Android smartphones equipped with a customized version of Open Data Kit. Interviewers transfer the data gathered to a central cloud server via the mobile data network, thus enabling real-time data checking and fast data aggregation and analysis.

41. A catalogue of surveys gathering demographic information and conducted during the period 1995-2014 includes over 700 entries additional to those conducted by the major survey programmes discussed above. Three large sets are the 71 Living Standards Measurement Study surveys used by the World Bank to measure poverty, the 70 World Health Surveys conducted under the guidance of WHO from 2002 to 2004 and labour force surveys coordinated by the International Labour Organization (ILO).

²⁰ See <http://mics.unicef.org/tools>.

42. Although most of the aforementioned surveys have been useful in palliating the lack of reliable vital statistics, they are no substitute for a well-functioning civil registration and vital statistics system. Demographic estimates derived from surveys are notoriously variable, owing both to random variation and reporting errors, particularly those involved in retrospective reporting of vital events. Yet, even if the availability and quality of vital statistics improve, demographic surveys will be needed to obtain information on the determinants of demographic behaviour and on the array of indicators related to population necessary to monitor implementation of the Sustainable Development Goals, such as those produced by Demographic and Health Surveys or Multiple Indicator Cluster Surveys.

43. Longitudinal surveys are particularly useful to document changes over time and their causes. They can be multi-round surveys, where all persons residing in a sample area are covered, or panel surveys, where a particular group of individuals, rather than households, is followed from one round to the next. Panel surveys are being used to study population ageing. The Survey of Health, Ageing and Retirement in Europe (SHARE) covers 20 European countries and Israel. The Generations and Gender Programme surveys 18- to 79-year-olds and has completed several rounds in 10 countries and one round in another 9. Harmonized datasets are being made available. The WHO Study of Global Ageing and Adult Health (SAGE) covers persons aged 50 and over and some aged 18-49 in China, Ghana, India, Mexico, the Russian Federation and South Africa. In addition, 18 multi-round surveys and 13 panel surveys covering other topics were conducted during the period 1994-2014, including 16 in Africa and 10 in Asia.

44. Surveys will remain essential for monitoring the Sustainable Development Goals. In planning them, it must be remembered that individual surveys cannot cover many topics without compromising quality. If change occurs slowly, collecting data over short time intervals would be wasteful, and sampling variability may overwhelm the small changes one is trying to measure. Furthermore, survey samples are typically not large enough to represent small geographic areas or small population groups. The uneven geographic distribution of some subpopulation groups relevant for the 2030 Agenda, including migrants and ethnic groups, may require special sampling techniques. In some cases, special modules may be added to existing household surveys. However, surveys alone cannot provide all the information necessary to ensure that nobody is left behind.

E. Health and demographic surveillance systems

45. Health and demographic surveillance systems monitor demographic events and health in a population living in a well-defined geographic area. The process starts with a baseline census followed by periodic visits (one to four annually) to all households in the area to record events (births, deaths and migration) and health-status changes. The system may also record marriages, divorces, changes in family status and household relationships. Health and demographic surveillance system sites can be used to test interventions aimed at changing demographic behaviour or improving health, with some areas receiving the intervention and others used as controls. The repeated surveillance of sites improves the completeness of recorded events over time, since events missed at one visit will likely be caught at the next. Despite not being representative of the national population, health and demographic surveillance system sites have been generating useful demographic data, particularly

on the age pattern of mortality and on causes of death via verbal autopsies in countries lacking a functional civil registration and vital statistics system.

46. There are two networks of health and demographic surveillance systems. The ALPHA Network, coordinated by the London School of Hygiene and Tropical Medicine, consists of 10 sites in Eastern and Southern Africa devoted to the study of HIV/AIDS, including sero-surveillance.²¹ The network maintains harmonized information from the 10 sites, but the data are not publically available.

47. The second network is INDEPTH,²² established in 1998 and based in Accra. It coordinates 52 health and demographic surveillance system sites in 20 countries in Africa, Asia and Oceania and is run by 45 research centres. INDEPTH coordinates multi-site projects generally focused on evaluating health interventions, acts as a clearinghouse for health and demographic surveillance system documentation and methodology and maintains two public-access data repositories online.

III. Compilation, harmonization and dissemination

48. Some institutions and initiatives compile demographic data or catalogues to assist users in accessing the information available. One of them disseminates harmonized microdata that are particularly valuable for comparative analysis.

49. Since 1948, the Statistics Division has been compiling and disseminating aggregate demographic statistics from censuses and civil registration and vital statistics systems via the yearly *Demographic Yearbook*. National data are obtained through a set of questionnaires dispatched annually to over 230 national statistical offices. Completed questionnaires can be submitted in digital form and full data series are accessible online.²³ The Statistical Division maintains the World Population and Housing Census Programme website where the implementation of censuses is monitored closely. The website is complemented by the online Census Knowledge Base, providing technical publications and a repository of census questionnaires worldwide. In Latin America, CELADE became the repository of census microdata in the 1970s and, as noted above, facilitates the analysis of census microdata by using REDATAM.

50. In 1999, PARIS21 was founded to promote and facilitate statistical capacity development and a better use of statistics in developing countries. The increasing role that surveys had in monitoring the Millennium Development Goals and the low utilization of survey results when they did not belong to international programmes led to the launch of the Accelerated Data Program in 2006 to improve national survey programmes and increase the use of survey data.²⁴

51. To that end, the Accelerated Data Program provides technical and financial support for the documentation and dissemination of survey data. It supports the establishment of national survey databanks and the adoption of national data collection standards to foster comparability across data sources. The Accelerated Data Program promotes open access to data and focuses on the documentation, preservation, dissemination, harmonization, collection and analysis of microdata

²¹ See alpha.lshtm.ac.uk.

²² See www.indepth-network.org.

²³ Available from <http://unstats.un.org/unsd/demographic/products/dyb/dyb2.htm>.

²⁴ See <http://adp.ihsn.org>.

generated by censuses, surveys or administrative systems. It coordinates activities with the International Household Survey Network, with which it shares a secretariat hosted by PARIS21, and is financed primarily by the World Bank through a grant to PARIS21.

52. Established in 2008 by a grant from the Department for International Development of the United Kingdom, the International Household Survey Network provides technical and methodological guidelines for all stages of survey taking, including standards, tools and guidelines to document, disseminate, and preserve microdata.²⁵ The Network maintains a catalogue on the availability of survey and census data. The catalogue contains, when available, survey questionnaire(s), manuals and report(s) and a list of related citations. The catalogue uses NADA, a web-based cataloguing system that serves as a portal for users to search, compare or apply for access to census or survey information from low-income and lower-middle-income countries. The catalogue does not provide direct access to microdata but, when available, provides a link to a site where the data may be accessed.

53. The Network also maintains a list of other catalogues directing users to survey or census data. With respect to demographic data, the relevant entries in that list include the Demographic and Health Survey site, the UNICEF Multiple Indicator Cluster Survey, the Global Health Data Exchange (GHDx) maintained by the Institute for Health Metrics and Evaluation of the University of Washington and IPUMS International²⁶ created by the Minnesota Population Center of the University of Minnesota. GHDx is a catalogue of surveys, censuses, vital statistics and other health-related data.²⁷ It shows which data are available for download and which require a registration process or are available only upon request. It covers data sources for both developed and developing countries.

54. A notable source of demographic microdata is IPUMS International. Begun in 1998 as a project to rescue census microdata from destruction or deterioration, the Integrated Public Use Microdata Series International provides access to 277 census samples dating from 1960 to 2014 and covering 82 countries, three quarters of which are developing countries. The census samples available are large: almost two thirds include a least one tenth of the population and 85 per cent include at least one twentieth. For most countries, census samples are available for multiple years. The IPUMS datasets are harmonized to ensure comparability over time and across countries. Consistent naming conventions for variables are used and variables are recoded to facilitate comparability. Census documentation, including questionnaires, is provided in English and in the original language. IPUMS provides a user-friendly interface to obtain the required extracts from the data, thereby providing an invaluable service that has greatly increased the use of microdata.

IV. Consistent and reliable estimates

55. The demographic evidence base encompasses not only data generated by statistical systems but also estimates derived from those data. Few institutions produce complete sets of consistent and reliable estimates of demographic

²⁵ See www.ihsn.org.

²⁶ See international.ipums.org/international/about.shtml.

²⁷ See www.healthdata.org/about/ghdx.

indicators and, among them, the Population Division is a major producer. Ensuring consistency and reliability of the datasets produced requires an evaluation of the basic data, adjustments for deficiencies detected and the use of estimation methods appropriate for each situation.

56. The Population Division produces the most comprehensive set of population estimates and projections for all countries and areas of the world. These estimates and projections are revised biennially and are accessible online.²⁸ The population estimates are available by age and sex for every country and have been used by the whole United Nations system to derive Millennium Development Goal indicators requiring population inputs.

57. The Division also produces urban, rural and city population estimates and projections, urban and rural populations by age and sex and estimates of the international migrant stock by age, sex and countries of origin and destination. Estimates of adolescent fertility, contraceptive prevalence and unmet need for family planning have been produced by the Division in collaboration with UNFPA as Millennium Development Goal indicators. Also for the Goals, the Inter-agency Group for Child Mortality Estimation, which includes the Population Division, has been producing estimates of infant and child mortality, and the Division collaborates with WHO, UNICEF, UNFPA and the World Bank in producing estimates of maternal mortality.

58. Two other initiatives have produced consistent sets of estimates of mortality and fertility referring mostly to developed countries. The Human Mortality Database,²⁹ created by the University of California at Berkeley and the Max Planck Institute for Demographic Research, contains time series of national life tables for 37 countries or areas having virtually complete vital statistics and census enumerations. It also contains data on registered deaths by age and sex, registered births and enumerated populations. A uniform method was used to construct the life tables, ensuring consistency over time and across countries. The database is accessible online and is the best source on changing mortality patterns in developed countries.

59. The Human Fertility Database³⁰ is a project of the Max Planck Institute for Demographic Research and the Vienna Institute of Demography. It provides online access to cohort and period fertility estimates to monitor, analyse and forecast fertility in developed countries. National time series of fertility indicators, generally starting in the 1950s or before, are available for 26 countries, 24 of them developed. The database is limited to populations with virtually complete birth registration and reliable population estimates over the reproductive ages. To ensure comparability, uniform methods are used to derive estimates.

60. The population estimates produced by the Population Division pertain to many of the special groups identified in the Sustainable Development Goals, including urban and rural populations. However, the estimation of urban and rural populations by age and sex is hindered by paucity of data since 28 per cent of countries lack such data, including 40 per cent of countries in Africa. Similarly, 15 per cent of countries lack data on international migrants by age and sex. Although most countries collect some information on internal migration, variation in both the

²⁸ See <http://esa.un.org/unpd/wpp/>.

²⁹ Available from www.mortality.org.

³⁰ Available from www.humanfertility.org/cgi-bin/main.php.

spatial and the temporal criteria used to identify internal migrants hinders the derivation of comparable estimates. ECLAC has developed three databases³¹ of particular relevance for these topics: MIALC (Internal migration in Latin America), IMILA (International migration in Latin America) and DEPUALC (Spatial population distribution and urbanization in Latin America and the Caribbean). The project entitled Internal Migration Around the Globe (IMAGE)³² has made major advances globally in compiling data on internal migration (it holds data for about 100 countries or areas) and in developing indicators of internal migration that are comparable between countries.³³ The project has also considerably increased the availability of data and indicators on internal migrants by age and sex, estimates that are necessary to model population change at the subnational level.

V. Integrating geo-referenced datasets

61. The integration of geo-referenced datasets, including those generated by satellites, to layer and map different types of information has been a major innovation. Such integration has proved essential in assessing the impacts of climate change, planning at the national and local levels, studying inequalities within countries and locating population groups vulnerable to natural disasters, famine and other risks. Three institutions are the main producers of integrated geo-referenced datasets that include population indicators.

62. The Center for International Earth Science Information Network of Columbia University was the first to overlay population data on a global raster.³⁴ The Gridded Population of the World, now in version 3,³⁵ uses a raster with a 5 km² grid cell to redistribute the world population enumerated by censuses so that it is compatible with geo-referenced datasets of social, economic and environmental information.

63. The gridded dataset is constructed from national or subnational units (usually administrative units) of varying resolutions. Separate grids are available for population counts and population density per cell, estimated for 1990, 1995 and 2000 and projected for 2005, 2010 and 2015. The Gridded Population of the World comprises many maps, including of population density and subnational administrative boundaries. The fourth version is under construction and is based on the 2010 round of censuses. It will produce gridded datasets with population counts, population by age and sex and population by urban/rural status using a 1 km² grid cell. Quinquennial estimates from 2000 to 2015 and a projection to 2020 are being prepared.

64. The Center also produces the Global Rural-Urban Mapping Project, which has three components: a gridded population data at higher resolution than the Gridded Population of the World for 1990, 1995 and 2000; a dataset delineating urban areas on the basis of night-light data produced by the National Oceanic and Atmospheric

³¹ Available from <http://www.cepal.org/es/migracion>.

³² See www.gpem.uq.edu.au/qcpr-image.

³³ Martin Bell and Elin Charles-Edwards, "Cross-national comparisons of internal migration: an update on global patterns and trends", Department of Economic and Social Affairs, Population Division, Technical Paper No. 2013/1.

³⁴ A raster consists of a matrix of cells (or pixels) organized into rows and columns (or a grid) where each cell contains a value representing information, such as population counts.

³⁵ Available from <http://sedac.ciesin.columbia.edu/data/collection/gpw-v3>.

Administration or from buffered settlement centroids where night lights are not sufficiently bright; and a dataset with a point for each urban area with at least 1,000 inhabitants. The Gridded Population of the World and the Global Rural-Urban Mapping Project have been used to estimate the populations at risk of specific natural disasters.

65. Using geo-referenced data on infant mortality and proportion of underweight children from Demographic and Health Surveys and Multiple Indicator Cluster Surveys, the Center has produced high-resolution maps to detect “hotspots” of poor child health. Layering environmental maps over the Gridded Population of the World, the Center has generated maps showing the population densities of areas highly vulnerable to climate change.

66. The WorldPop project of the Geo-Data Institute of the University of Southampton generates open-access datasets on the spatial distribution of populations in Latin America, Africa and Asia to support development planning, disaster response and health applications. It produces updatable maps with accompanying metadata and measures of uncertainty. More recently available remotely sensed and geo-referenced datasets, such as settlement locations, settlement extents, land cover, roads, building maps, health facility locations, satellite night lights, vegetation, topography and location of refugee camps, have been used to model population densities at a high spatial resolution. The resulting gridded population datasets have been the basis for deriving spatial distributions of other population indicators, such as births, pregnancies and population by age.

67. IPUMS has been developing TerraPop, a system that integrates three types of geo-referenced data: population microdata from IPUMS; summary indicators for geographic areas, including economic indicators or policy information; and global raster data derived from satellite imagery and climate models. The first phase of TerraPop involved geo-referencing existing census microdata to maintain the consistency of administrative boundaries over time, thus enhancing the inter-temporal comparability of subnational data. TerraPop will allow users to convert microdata to raster format for visualization or spatial modelling.

VI. Big data as a complement to demographic data

68. Because of the widespread penetration of ICT, digital information is being generated continuously by GPS devices, mobile phones, automated teller machines, scanning devices, sensors, satellites, search engines and social media. The large volume, high velocity and wide variety of the data thus generated are defining characteristics of what is called “big data”. Most big data are available in real time and at minimal cost.

69. However, big data are often unstructured and do not fit well into relational databases. Being massive, their analysis demands considerable computer power and deep knowledge of ICT and of the data-generation process. Lack of representativity is a major drawback of big data since any insights they yield cannot be attributed to the general population or even to a well-defined population group. Furthermore, most big data are in private hands and legislation designed to permit their use for statistical purposes has not yet been adopted in most countries. Issues of concern about privacy and confidentiality need to be addressed if big data are to become a source for regular statistical analysis.

70. So far, satellite-imaging data have been the main type of big data used for demographic applications and, as documented above, static datasets have been used rather than the continuous flow of satellite imaging. Call detail records generated by mobile phones have been used to explore human mobility and relate it to different processes, including natural hazards, road traffic and the spread of infectious diseases; they have also been useful in mapping populations at risk of natural hazards, climate change or epidemics. Applications that relate population indicators to call detail records to estimate the population in raster cells or other small areas show some promise. However, their use at a global scale is not yet a reality, partly because no single company can provide call detail records with complete global coverage.

71. WorldPop is planning to use the geo-location of social media activity as an additional variable in the model used to redistribute population in a raster and to assess whether these data can improve projections of geo-located populations. So far, all studies relating population indicators to big data use geo-referenced demographic information from censuses or surveys as necessary inputs. Call detail records and tweets are at best a correlate of population indicators and therefore far from being able to substitute for traditional demographic data sources.

VII. The challenge of disaggregation

72. Monitoring the Sustainable Development Goals will require population data disaggregated by age and sex, race or ethnicity, migratory status, disability, income and geographic location. The three demographic data systems that cover the whole population — censuses, population registers and civil registration and vital statistics — can produce the required level of disaggregation provided they gather the relevant information, geo-reference the data at the smallest administrative level or higher spatial resolutions and provide access to microdata for the full population so that information for particular groups can be extracted. If access is limited to samples, data producers should release aggregate population numbers based on full counts and classified by relevant socioeconomic characteristics, including sex and single years of age, for the smallest administrative areas.

73. Countries having population registers can link them to other administrative datasets. However, because many countries lack population registers or complete civil registration and vital statistics systems — the only systems that produce continuous coverage of the whole population — modelling will be needed to estimate disaggregated populations over intercensal periods. Surveys will continue to fill gaps in demographic information caused by incomplete vital statistics and to measure indicators that other sources do not yield. Geo-referencing survey data routinely to integrate such information with other datasets will boost their utility and permit geographical disaggregation by using statistical modelling.

VIII. The way forward

74. The availability of reliable and timely demographic data is essential for planning and implementing interventions to achieve the Sustainable Development Goals and to monitor progress towards their achievement. As the present report has shown, much remains to be done to strengthen data systems and to support the

in-depth analysis, disaggregation and use of the data generated. The following recommendations provide guidance on how to achieve those ends.

75. Donors should support the Global Financing Facility in support of Every Woman, Every Child or other financing mechanisms that provide assistance for the establishment or expansion of civil registration and vital statistics systems in developing countries.

76. Governments of countries lacking complete vital statistics should commit to establish a functioning civil registration and vital statistics system and ensure that it generates timely vital statistics. Governments of countries with incomplete or deficient vital statistics should develop and implement strategies to improve coverage and reporting accuracy and to foster the collaboration of civil registration with the health system to improve the reporting of causes of death according to the guidelines set by WHO.

77. Governments should support the preparation and undertaking of the 2020 round of censuses. National authorities should leverage technology to improve the efficiency of data collection, processing and dissemination. They should ensure that geo-referencing becomes standard practice in census taking and that the corresponding spatial datasets are made available in digital form.

78. Governments should adopt open-data policies allowing the dissemination of public-use, geo-referenced and anonymized microdata from censuses, demographic surveys and civil registration and vital statistics systems.

79. National authorities should ensure that the standards, guidelines and tools used for data collection are consistent with guidance provided by the Statistical Commission and other relevant international or regional organizations and networks.

80. Data producers should ensure that demographic statistics are classified by age and are presented by single year of age from 0 to 99, and always by sex.

81. Governments and donors should support and promote access by national statistical offices to the necessary ICT equipment and software to improve the collection, processing and dissemination of data. Equally important is support for personnel training in the use of new technologies.

82. Governments should strengthen the capacity of national statistical offices to conduct household surveys and encourage data producers to follow the guidelines developed by the Accelerated Data Program and the International Household Survey Network on how to conduct household surveys, document the survey process, disseminate the data gathered and archive them. Specialized surveys may be needed for population subgroups that are unevenly distributed in the national territory, including internal and international migrants.

83. Governments should encourage and support efforts to integrate demographic and other data sources via geo-referencing, including by facilitating access to satellite images. This is particularly important given the emphasis of the 2030 Agenda on the well-being of all population groups, reinforcing the need for data disaggregation and for moving beyond national averages. The private sector should support such efforts by providing access to big data under its control.

84. Governments and donors should continue supporting work on harmonization and integration of data and are encouraged to contribute microdata from the 2010

round of censuses to national, regional and international repositories to facilitate their use in setting a baseline for monitoring the Sustainable Development Goals.

85. Governments should develop policies for the use of big data, including safeguards to maintain privacy and confidentiality, and guidelines to facilitate access to data controlled by private firms.

86. Governments should encourage greater cooperation between national research institutions and national statistical offices to foster the in-depth analysis of existing demographic data. Partnerships with institutions already involved in producing globally integrated datasets or consistent and comparable sets of demographic estimates should also be fostered.

87. The United Nations system, including the Secretariat, the regional commissions and specialized funds, should continue their work and support to the inter-agency and expert groups to harmonize estimates, improve estimation methods, report progress at the regional and global levels and enhance national capacities in the production and use of quality demographic data.



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**Actions for the further implementation of the Programme
of Action of the International Conference on Population
and Development**

Programmes and innovations to strengthen the demographic evidence base for the implementation of the Programme of Action of the International Conference on Population and Development and the 2030 Agenda for Sustainable Development

Report of the Secretary-General

Summary

The 2030 Agenda for Sustainable Development is based on the assumption that every country is able to identify and locate the vulnerable, identify interventions that result in the greatest improvements in their welfare and monitor equality of progress over a wide array of goals and targets. People are at the centre of those aims, which echo recommendations of the Programme of Action of the International Conference on Population and Development (1994), the Key actions for the further implementation of the Programme of Action (1999) and the Framework of actions for the follow-up to the Programme of Action beyond 2014 (2014). Each of these characterizes a vision of sustainable development based on the achievement of universal human rights and equality, sexual and reproductive health, gender equality and the empowerment of women, education, security of place, economic growth and the dignity of all persons.

Many developing countries, however, cannot redress population inequalities because they lack core demographic data and their data systems are underdeveloped and/or heavily oriented to data production, with inadequate attention to the use of data for national planning and monitoring progress in sustainable development.

* E/CN.9/2016/1.



The coming push for a data revolution will be successful if it ensures strong national data ecosystems within each country, with institutional capacity to use and integrate diverse types and sources of population data, including better administrative data on health, education, transport, energy and the many sectors essential for development. To achieve those aims, countries will need to raise the political priority of establishing national statistical systems to implement and monitor the agendas of the International Conference on Population and Development and the Sustainable Development Goals; prioritize the long-term growth of institutions, including a new generation of population experts; and develop strategies for data collection, especially for the 2020 census round, that are embedded within efforts to improve the use of such data by Governments and civil society to advance human rights and equality.

The present report, prepared by the United Nations Population Fund, identifies key shortfalls in national population data ecosystems that need to be addressed in order for countries to fulfil the aspirations of the 2030 Agenda and the Programme of Action of the International Conference on Population and Development; highlights programmes supporting innovative ways to generate and use population data for development in a wide range of countries; and identifies promising investments to strengthen data for development planning, implementation and reporting.

I. Introduction

1. Evidence-based decision-making is a universally recognized foundation of good governance and the overall efficient management of social and economic affairs. Relevant, accurate and timely population data are a sine qua non of such decision-making, enabling Governments to anticipate public needs, determine the impact of public policies and confirm the pace of progress.

2. The transformative demand of the 2030 Agenda for Sustainable Development is that every country will be able to identify and locate the vulnerable, identify interventions that result in the greatest improvements in their welfare, and monitor progress over the wide array of Sustainable Development Goals and targets. This demand for the disaggregation and use of population data for planning, evaluation and the monitoring of progress presents a serious challenge, given the number of countries that still lack core sources of population data¹ and have long-standing weaknesses in their data ecosystems.

3. The emphasis on population data for sustainable development echoes recommendations of the Programme of Action of the International Conference on Population and Development (1994), the Key actions for the further implementation of the Programme of Action (1999) and the Framework of actions for the follow-up to the Programme of Action beyond 2014,² which included an extensive evidence-based assessment of progress across the substantive range of the Programme of Action. A valuable product of the 2014 review was insight into key vulnerable populations whose human rights had been neglected and inequalities in population health, particularly in sexual and reproductive health, that had persisted or worsened since the 1990s. Such inequalities were masked by the national aggregate reporting required for the monitoring of the Millennium Development Goals, allowing subnational and other important population inequalities to fall below the radar of national monitoring systems.

4. Addressing these gaps and achieving evidence-based sustainable development will require more than periodic data collection through the census and household surveys; it will require accelerated progress towards the integration of real-time civil registration and administrative data in all major sectors (for example, health and education); assurances that census and survey data will be georeferenced and widely accessible; and greater investments in order to collect critical data on mobile and disenfranchised populations. Perhaps most importantly, it will require redressing the glaring weakness in many national systems for the analysis of data and production of results, and the translation of those results into the national planning and monitoring of investments.

5. The present report identifies key shortfalls in national population data ecosystems that need to be addressed in order for countries to fulfil the aspirations of the 2030 Agenda and the Programme of Action of the International Conference on Population and Development and its review outcomes; highlights innovative programmes that support the generation and use of population data in a wide range of countries; and identifies promising investments to strengthen demographic data for the fulfilment of the Programme of Action and the 2030 Agenda.

¹ For a review of national capacity, see E/CN.9/2016/3.

² See A/69/62.

II. Challenges of strengthening population data for the implementation of the Programme of Action of the International Conference on Population and Development and the 2030 Agenda for Sustainable Development

6. During the broad public debates on the indicators for the Sustainable Development Goals in the course of 2015, two key points emerged regarding statistical capacity-building for the 2030 Agenda. First, more holistic approaches to building national statistical capacity will be essential to ensure that institutions have the flexibility and capacity to integrate data from different sources. Second, while the necessary focus on indicators during 2015 concentrated on monitoring and reporting, more efficient and strategic national and local use of population and related data for planning and implementation — with reporting as a by-product — is of primary importance.

7. Notwithstanding the increasing awareness of the need for a major expansion in strategic and routine use of population data, current approaches in many developing countries are oriented heavily around the production and processing of data. Many national statistical offices have a limited mandate in respect of the analysis and use of data beyond the production of thematic reports on the census or the demographic and health or multiple indicator cluster surveys, creating an institutional firewall between data producers and users. On the other side of this firewall, the capacity of local planners, academics, independent analysts and public activists to analyse and use population data is often very limited.

8. Within the focus on data production, there is a high degree of specialization between data types, namely, censuses, household surveys, civil registration and vital statistics, and other administrative data. This specialization diminishes the likelihood of strong integration between data types, which is essential for integrated development analysis. It also has major spillover effects on the sustainability of skilled human resources. In particular, the size of the census operation requires massive, expensive expansion of capacity during census-taking, often relying on short-term consultants and interviewers; the implementation of the demographic and health survey or the multiple indicator cluster survey requires a parallel periodic expansion, albeit to a lesser degree. Too often, internationally driven systems for the generation of data, concluding with the production of a single summary report, offer little institutional strengthening, which is needed to create a vibrant knowledge society, and those that do are often not matched by corresponding government investments.

9. Critical attention needs to be paid to these gaps in national capacity if the fulfilment of the 2030 Agenda is to result in a true acceleration of resilient national data ecosystems. Key challenges in the use of data across the pillars of national population data systems, namely, census and registration systems complemented by surveys and other relevant data, are assessed in the next section.

A. Counting the world: population and housing census

10. On 10 June 2015, the Economic and Social Council adopted resolution 2015/10 on the 2020 World Population and Housing Census Programme. The

Council urged Member States to conduct at least one population and housing census during the period from 2015 to 2024 and underscored the need for countries to set quality standards. The United Nations Population Fund (UNFPA) was a key supporter of the 2010 round of censuses, partnering with the United Nations Statistics Division and multilateral partners.

11. During the 2010 census round, UNFPA contributed technical and/or financial support to censuses in more than 135 countries, including 122 developing countries.³ In most cases, this support was carried out in partnership with other United Nations agencies, drawing on the Statistics Division guidelines on census operations. Support ranged from resource mobilization to planning; data collection and processing; analysis, including generating population projections; and dissemination. United Nations and donor support was pivotal in many countries, and a substantial number of countries continue to need both fiscal and technical support for their census. The number of countries fully funding their census nevertheless increased over the prior round.

12. An independent evaluation undertaken in 2014 to assess the role of UNFPA in the 2010 census round suggests valuable lessons regarding not only the contributions of UNFPA, but also the overall gaps and shortfalls in national census programmes.⁴ Preliminary findings indicate that notwithstanding improvements in the public sharing of census data in many countries, an uptick in the use of census data by national Governments, academics and civil society organizations has not materialized. Strong support for the generation of census data has not been matched by capacity strengthening for the national and local use of the census for the analysis of population trends or development indicators. Even their use as a planning tool for public infrastructure remains underrealized in many countries. While the dissemination of census results improved in 2010 over the 2000 round (for example, with more summaries of simple census tabulations posted online),² most developing countries still lack public websites that provide an analysis of the census results. As the three largest donors strengthening statistical capacity in the developing countries, the European Commission, the World Bank and UNFPA were largely recognized for their support for the implementation of the census, but support for building national data institutions lags behind other dimensions of development aid.

13. In itself, the 10-year gap between censuses generates a challenge for capacity development, given that substantial funds and manpower are often mobilized to generate the census — admittedly an expensive national operation — but dissipate quickly thereafter. The preliminary findings of the evaluation suggest a gap between the support given to countries for the generation of the census and what is actually needed to ensure that the resulting data truly add value to national planning and evaluation. Much more focus by development partners and national Governments is necessary to enhance the training and capacity of both Governments and the public to use census and related demographic data for national development.

³ The other 13 countries were Eastern European countries with economies in transition.

⁴ Findings of the United Nations Population Fund (UNFPA) 2010 census evaluation will be publicly available in June 2016.

B. Civil registration and vital statistics

14. Ideally, a periodic census is complemented by a robust civil registration and vital statistics system that generates data on births, deaths and marriages as they occur, allowing routine annual national and subnational tabulations. The adoption of target 16.9 of the Sustainable Development Goals affirms that birth registration is critical to achieving legal identity for all people and a necessary precondition of human rights and inclusive and just societies,⁵ and the existing gaps in civil registration and vital statistics systems have serious repercussions for development prospects. Yet, because the maintenance of such systems requires the continuous functioning of sectoral information systems as well as public trust, only 137 countries have 90 per cent or more coverage of birth registration; only 126 have 90 per cent or more coverage of death registration; and even fewer have complete coverage of cause of death or marriage registration.⁶ In the least developed countries, only about a third of births are registered, notwithstanding a 30 per cent increase since 2000. Only 39 per cent of births in South Asia and 44 per cent of births in sub-Saharan Africa are registered, with rates of less than 10 per cent in Ethiopia, Liberia and Somalia.⁷ Rural and poor households are typically the least able to register births, meaning that those most in need of development interventions are the least likely to be counted.

15. Countries need information on births and deaths in order to confer and guarantee citizenship and to plan nearly all aspects of public infrastructure development and social service provision, including health-care and education services. At the individual level, the right to be counted is fundamental to social inclusion,⁷ and civil registration provides legal documentation essential to protecting citizenship, property and other economic, social and human rights.⁸ Birth registration has direct implications for the provision of schools, as children are born and enter school at intervals far shorter than a 10-year inter-census period, and death registration is often a requirement for burial, remarriage or the resolution of criminal cases.⁷ Birth certificates may be required for a child to access essential health-care systems or enrol in school and to establish family identity, which can be particularly important in times of crisis.⁹

16. Civil registration and vital statistics systems are also a cornerstone of a well-functioning health system, ensuring that countries can plan effective public health policies, measure the impact of health programmes, and proactively respond to epidemics and halt the spread of disease. Vital statistics enable the estimation of vaccine and child health-care coverage and, in the case of maternal mortality, both birth and death registrations are needed for surviving children to receive social protection services. Progress on the coverage of death registration is even less

⁵ Target 16.9 of the Sustainable Development Goals (By 2030, provide legal identity for all, including birth registration) is recognized as necessary for the fulfilment of Goal 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels).

⁶ See United Nations Statistics Division, Coverage of Birth and Death Registration, available from http://unstats.un.org/unsd/demographic/CrVS/CR_coverage.htm.

⁷ See <http://www.who.int/mediacentre/factsheets/fs324/en/>.

⁸ See <http://blogs.worldbank.org/developmenttalk/why-civil-registration-matters-in-the-countdown-to-the-millennium-development-goals>.

⁹ See <http://ma4health.hsaccess.org/docs/support-documents/crvs-6-4-15-web.pdf?sfvrsn=2>.

advanced than for birth registration, yet death registration by age, sex and cause is critical for informing Governments about the changing burden and severity of disease, including the population or spatial distribution of illness and disability.

17. Programmes designed to expand opportunities for birth registration suggest that there is greater latent demand for birth registration than for death registration; the greater challenge is to ensure opportunity and develop an efficient and sustainable public record system. The expansion of death registration is more difficult, given that death registration must overcome public uncertainty about the value of such reporting, many deaths occur outside clinical facilities and, even when deaths are attended by health-care staff, the cause of death has inherent problems of misclassification, with some causes underreported owing to potential stigma.

18. Notwithstanding the obstacles to marriage and divorce registration, it is generally agreed that marriage and divorce registration play important protective functions in terms of ensuring that matrimonial property and individual rights are protected. Marriage registration and the corresponding statistics have the potential to identify critical human rights violations such as child marriage (for which birth registration for age identification is also necessary) and forced marriage, thus protecting girls and women. In sub-Saharan Africa, for example, the registration level for marriage and divorce is dismal. Only a fraction of marriages in sub-Saharan Africa are registered and an even smaller proportion of divorces are captured within the civil registration and vital statistics system. Low registration coupled with high numbers of consensual unions result in low crude marriage rates in Eastern and Southern Africa, with South Africa, for example, registering a crude marriage rate of 3.5 per 1,000 people and a crude divorce rate of 0.6 per 1,000 people.

19. In Europe, even after civil registration moved from the churches to a civic (secular) system, it took many countries two centuries to reach universal coverage. Today, the widespread availability of technology and technical guidelines can allow countries to increase civil registration and vital statistics coverage with unprecedented rapidity.¹⁰ The national level of wealth is not necessarily a hindrance. For example, both Senegal and Madagascar have been forerunners of civil registration and vital statistics coverage and South Africa has increased the coverage of birth and death registration to 95 per cent over the past 20 years.¹¹

C. National administrative data

20. Many countries have national registration systems that extend far beyond health or vital events, including national registries on residential status, public school enrolment, tax data and more. A number of countries, including Austria, Denmark, Finland, Iceland, Norway and Sweden, use individual identification numbers for each citizen to integrate population registries and administrative

¹⁰ The Civil Registration and Vital Statistics Digitization Guidebook, for example, is an integral part of the civil registration and vital statistics strengthening support offered to African countries by the African Programme on Accelerated Improvement of Civil Registration and Vital Statistics. It is available from <http://www.crvs-dgb.org/fr/> for Francophone countries and <http://www.crvs-dgb.org/en/> for English-speaking countries.

¹¹ See Pierre Cantrelle and Michel Garenne (2015), "L'Etat civil en Afrique sub-saharienne: Historique d'un malentendu et espoirs pour l'avenir". Paper prepared for the seventh African Population Conference, 30 November-4 December 2015, Pretoria, South Africa.

databases and even use them to produce national census-like data.¹² Other European countries supplement the registries with survey data or pre-populate census questionnaires with registry data for confirmation. Denmark, a forerunner in the expanded use of national administrative data, is leading an effort to mentor other countries interested in evolving their national data registries.

21. Ecuador is the first country in Latin America proposing to migrate from the traditional census to a register-based census. To accomplish this, Ecuador has prioritized the strengthening of its civil registration and vital statistics system, as well as the enhancement of administrative records. For 2020, the country will undertake a combined exercise of a traditional census and a counting process based on civil registration and vital statistics and administrative public records; this is intended to evaluate the coverage of administrative records and establish the baseline of a future census system based on such records.

22. The cost-saving and sector-strengthening potential of such extensive civil registration systems are offset by the requirement that each sectoral data system (for example, health or education) be strong in and of itself. The use of individual identifiers that archive wide-scale personal data requires that Governments ensure the confidentiality of public records and that there be public trust in government.

23. Even where such systems are not comprehensive or fully integrated, registry data can provide enormous value when a census cannot be conducted. Ukraine did not conduct a census during the 2010 round and the previous national population census took place in 2001. National population statistics in the intercensal period were based on vital registration and limited data on registered migrants. Statistical reporting in the country has, however, been disrupted since 2014. Conflict and other crises that affect the administrative control of territories or lead to population displacement affect the quality of population data and, in turn, compromise planning processes in all sectors and at all levels, including humanitarian response.

24. At the request of the Council for National Security and Defence of Ukraine and the Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine, UNFPA provided technical support for a population assessment exercise to validate the available population information sources, including the administrative databases of various governmental agencies, and built a population estimation model, based on the available data, for estimating overall population numbers and sex/age structure at the national and provincial (*oblast*) levels. Not all administrative databases containing valuable population information could be accessed at the time but, in 2016, population figures will be modelled using this methodology.

25. Such examples illustrate the substantial advantages for countries with multiple sources of population data, as well as the institutional capacity for inferential use of data from diverse sources. While such comprehensiveness and expertise represent a high standard to achieve, they lead to resilient population data systems, enabling countries to endure interruptions in data generation through model-based estimations.

26. Of all the administrative data, health-related data are among the most critical to the achievement of universal access to sexual and reproductive health and rights

¹² See E/CN.9/2016/3.

and to fulfilling the Programme of Action of the International Conference on Population and Development. The persistent weakness in health information systems in many countries has a direct impact on the capacity of health systems to respond to public needs. Death registration by cause of death is only one aspect of the data needs for strengthening health information; comprehensive health management information systems include routine and reliable data on case-reporting, health statistics, caseload and occupancy rates, stocks and flows, health worker competence and coverage, and quality of care. Countries where the quality of health information is especially weak are the same countries where the burden of preventable illness is most acute.

D. Population and household surveys

27. To accommodate the limited reliable population and health data available from civil registration and vital statistics and other national registries, and even the population counts from missing census data, household surveys such as the demographic and health survey and the multiple indicator cluster survey have become a critical source for monitoring progress in aspects of sexual and reproductive health and rights, and the status of women and girls, which are of central priority in the Programme of Action of the International Conference on Population and Development. While the World Fertility Survey, the forerunner of the demographic and health survey, was initially conceived as a stop-gap measure to collect data on births, family planning and maternal and child health until corresponding national health sector and population data systems evolved, these surveys continue to be the most reliable source of data for monitoring sexual and reproductive health outcomes and behaviours in many developing countries and will remain a critical source for reliable and comparable monitoring of many Sustainable Development Goal indicators.

28. Despite the importance of the demographic and health survey and the multiple indicator cluster survey in today's data ecosystem, the global dependence on these surveys underscores some limitations. According to a recent analysis by the Brookings Institution,¹³ 39 low-income and lower-middle-income countries with a total population of 1.9 billion do not conduct health surveys at least every five years. The financial gap needed to achieve this benchmark for all developing countries is quite small compared with global data investments, suggesting that other factors, including capacity and national ownership, are more critical drivers.

29. Further, household surveys do not capture highly mobile populations well, including those displaced by crises, internal and international migrants, internally displaced persons and refugees, and do not provide information on populations outside of households, such as homeless populations and people living in collective housing such as schools or factories. Sampling limitations mean that surveys are often only representative at the regional level; this can limit the utility of surveys in settings where there is high inequality in concentrated spaces. The need to maintain continuity and a focus on women of reproductive age has meant that valuable data on young people below the age of 15 and adults above the age of 49 are missing in countries that lack sources of data other than the demographic and health survey and

¹³ Laurence Chandy and Christine Zhang "Stuffing the data gaps with dollars: What will it cost to close the data deficit in poor countries?" (Brookings Institution, 31 August 2015).

the multiple indicator cluster survey. Nevertheless, the 2030 Agenda proposes to track the needs of the young and the old through the disaggregation of many variables across the Sustainable Development Goals. In countries that rely heavily on the demographic and health survey or the multiple indicator cluster survey, data gaps for young and older persons will need to be accommodated by new surveys or innovations and adaptation of existing sources.

30. The expansion of household surveys on older persons in many regions will be critical.¹² Although they are already widely used in the developed countries, such surveys have gained traction in Asia and are expanding into Africa, but they require far greater support. For select indicators for the Sustainable Development Goals, for example, in the domain of violence towards older persons, new dedicated global surveys will be needed and are currently under discussion at several United Nations agencies.

31. Regarding data on adolescents and young people, few global household surveys collect data directly from young people in this age group; yet, their health and development needs are pivotal to the long-term success of countries, especially those currently facing a youth bulge and attempting to harness a demographic dividend. Indicators for target 3.7 of the Sustainable Development Goals, for example, include the adolescent birth rate among girls aged 10 to 14. While such data can be estimated retrospectively from older women in the demographic and health survey or the multiple indicator cluster survey, Uganda has recently decided to adapt the Uganda AIDS Indicator Survey (a variant of the demographic and health survey that is operated in many HIV-affected countries), which already collects data on girls aged 10 to 14 years, to include direct questions on pregnancies and births. An expansion of the demographic and health survey or the multiple indicator cluster survey to include routine data for 10- to 14-year-olds would ensure standardization across the widest possible number of countries.

III. Opportunities and challenges of the 2030 Agenda for Sustainable Development: innovations in the generation and use of population data

32. The 2030 Agenda for Sustainable Development, which advances the aspiration that no one will be left behind, will be constrained if Member States are unable to identify and locate the most vulnerable people through available sources of data. While censuses can provide fine levels of disaggregation, they are generated infrequently; the majority of household surveys are limited in their geographic disaggregation and population coverage; real-time registry data remain limited in most developing countries; and while big data sources provide data in (near) real-time, they offer little or no demographic certainty. Triangulation and the ability to integrate multiple types of data are therefore essential to address subnational inequalities and ensure the rights and capabilities of all persons.

33. The call for a data revolution¹⁴ recognizes this fact, focusing on the integration of existing and routinely gathered data and building resilient national institutions for

¹⁴ "A World That Counts: Mobilizing the Data Revolution for Sustainable Development", report of the Secretary-General's Independent Expert Advisory Group on a Data Revolution for Sustainable Development, November 2014.

generating knowledge in all countries. The coming push for statistical capacity-building will be successful if it results in an integrated national data ecosystem within each country, wherein:

(a) Core demographic sources of data, namely, a georeferenced census, civil registration and vital statistics and national sector registries, provide a foundation for national planning, supplemented by periodic surveys and innovative new sources;

(b) New approaches to data integration and modelling are standardized and widely accessible, in particular to fill gaps or respond to interruptions or crises in a rapid, cost-efficient manner;

(c) Data are accessible to all members of society and used by strong, diverse institutions — both public and private — with strong national ownership, in order to advance development.

34. At the heart of the 2030 Agenda is the interaction between multiple dimensions of sustainable development and the recognition that determinants of inequality are often compounded across simultaneous social, environmental, economic and spatial exclusion. Diagnosing and responding to the complex determinants of inequality require the flexible and integrated talents of nationally based experts, in strong research institutions, who can work with population data from multiple sources, generate sound and needed analyses for and within their own countries, and partner with regional and global initiatives for data-sharing and innovation. The following examples cover a range of approaches to population data use that address complex needs and leverage the power of integrated analytic approaches to further the goals of the International Conference on Population and Development and the Sustainable Development Goals.

A. Data integration for the demographic dividend

35. In the past decade, there has been growing interest among Governments in the importance of population age structure for social and economic development, including ageing and the development potential of a demographic dividend. The demographic dividend is increasingly recognized by national Governments and the international community as a valuable framework that illustrates the linkages among rights-based human capital development, women's empowerment and sexual and reproductive health and economic growth. The window of opportunity is now open for many emerging economies in Africa and Asia to harness the potential benefits of a demographic dividend.

36. In 2015, UNFPA deepened investment in policy analysis, thought leadership and advocacy with government leaders in order to highlight the potential of the demographic dividend. After several years of preparation, the World Bank-funded and UNFPA-managed Sahel Women's Empowerment and Demographic Dividend project was launched in 2015 to advance the demographic dividend in six countries of the Sahel region. In the course of 2015, UNFPA supported national demographic dividend analyses with partners from the African Institute for Economic Development and Planning in Botswana, Burundi, the Democratic Republic of the Congo, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Rwanda, Uganda, the United Republic of Tanzania and Zambia. UNFPA provided technical and fiscal

support to model the prospects for a demographic transition and a demographic dividend in each country, using DemDIV and national transfer accounts.

37. National transfer accounts integrate household surveys, population projections and national economic data to disaggregate the specific contributions of population dynamics to economic growth, subject to economic constraints such as the labour participation rate and the productivity of newcomers to the labour market. This type of analysis allows Governments to model the intergenerational transfers between dependent and non-dependent populations over time, allowing tighter planning for fiscal and social policies, modelling of the differentiated effects of inequality, and a gender division of work.

38. The integrated use of demographic and economic analysis to illustrate the potential for a demographic dividend has led to clear changes in public policy, in directions that further the goals of the International Conference on Population and Development. The attention to the demographic dividend has led many Governments to recognize the development potential of current demographic trajectories and the urgency of better schooling and expanded job opportunities and to make new commitments in family planning, youth programmes, employment and entrepreneurship.

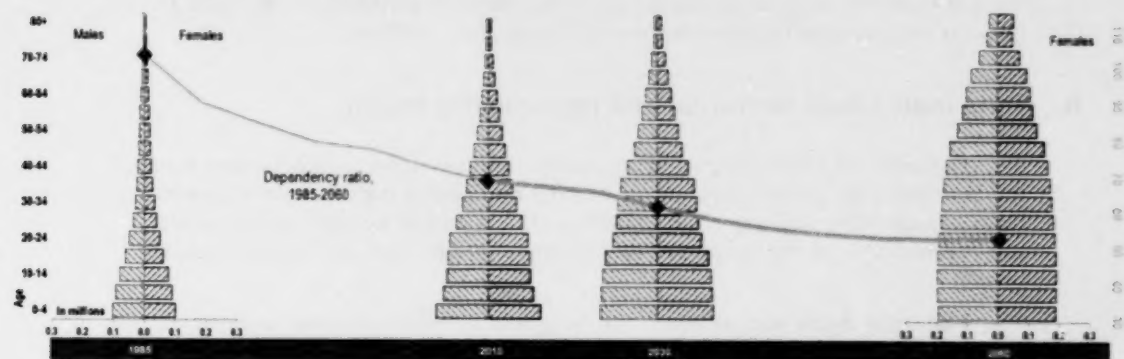
39. A case in point is the political commitment and policy directions adopted by the Government of Zambia following a national study on the demographic dividend. UNFPA supported the Government in conducting the study and has created inroads for further strategic engagements by relevant public and private sectors, as well as civil society and development partners, on the integration of population variables into national development planning. Signed by the President of Zambia, the study findings and policy options served as inputs to a number of national position papers and statements, including the presidential statements and session on the demographic dividend at the seventieth session of the General Assembly. The study has been endorsed by the Cabinet of Ministers as a key resource to guide the seventh National Development Plan (2017-2021), which will also capture Zambia's domestication of the Sustainable Development Goals.

40. In Uganda, following the demographic dividend study carried out by the National Planning Authority, President Museveni launched the resulting report during a family planning conference and, for the first time, publicly pronounced support for family planning. In Kenya, the National Youth Service has reinforced the Government's commitment to ensuring that young people in Kenya have access to education and training, that they are protected from harmful practices such as child marriage and female genital mutilation and that they have opportunities for employment, including by establishing a Youth Enterprise Development Fund. Similar demographic dividend-related policy shifts and commitments to expand family planning, youth empowerment, education and employment are evident across a number of countries.

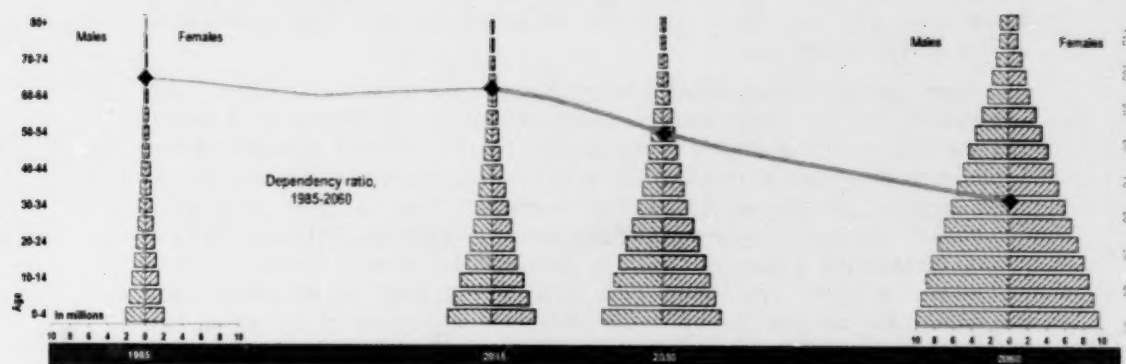
41. New displays of integrated data on the demographic dividend developed by UNFPA have also spurred significant interest from Governments. These include dashboards featuring projected age pyramids and the current status and trends of key dimensions of youth empowerment, education and employment (see dashboard examples highlighting disparate population age structure and child marriage in Namibia and the United Republic of Tanzania).

Figure 1
Age structure and child marriage in Namibia and the United Republic of Tanzania

Namibia: age structure and total dependency ratio

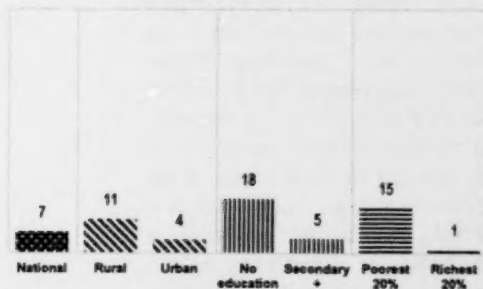


United Republic of Tanzania: age structure and total dependency ratio



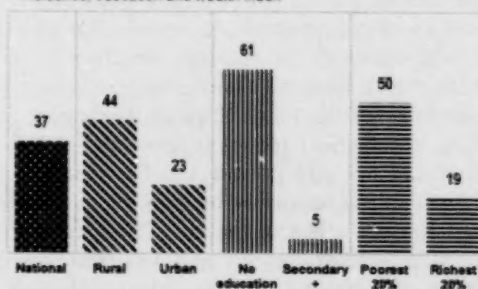
Namibia, Child marriage, 2013

Percentage of women 20-24 who got married before age 18, by residence, education and wealth index



United Republic of Tanzania, Child marriage, 2010

Percentage of women 20-24 who got married before age 18, by residence, education and wealth index



Data source: World Population Prospects: The 2015 Revision: Key Findings and Advance Tables (Demographic and Health Surveys).

42. Prospects for combining key variables of empowerment, education and employment into a "demographic dividend index" have been shared in a number of international meetings, again with high interest from key countries. A range of countries have requested national meetings on the demographic dividend in 2016 to share subnational integrated analyses and bring multiple ministries to the table for concrete and integrated policy work on the demographic dividend.

B. Data innovations for sexual and reproductive health

43. National and global support to strengthen health systems — a persistent need that warrants even greater attention — is being provided in parallel with a growing range of innovative stop-gap efforts to secure critical data on key preventable sexual and reproductive health outcomes and improve health-care services for young people.

44. **Maternal death surveillance and response.** UNFPA supports countries in implementing maternal death surveillance and response systems and improving the reporting of maternal deaths, the quality of data and the appropriate response. If target 3.1 of the Sustainable Development Goals (reduction of maternal mortality) is to be achieved, deaths need to be registered by cause of death so that patient management protocols can be reviewed and optimized and overall health-care service delivery can be improved.

45. Demographic data are essential for evaluating maternal death surveillance and response systems in that they enable a comparison of the expected maternal deaths and the number of reported maternal deaths. Niger is a good example of the implementation of such a system. In 2014, 31 per cent of expected maternal deaths were reported (facility-based maternal mortality), with a good geographic distribution. Although this rate is insufficient for an in-depth national analysis of the causes of maternal deaths in Niger, it positions the country among the best performers in Africa and South-East Asia with respect to maternal death surveillance and response. Further, maternal death disaggregation by age shows that 29 per cent of reported maternal deaths in facilities are among girls between the ages of 10 and 19. This provides evidence to support the need to discourage early, child and forced marriage and early pregnancy.

46. **Obstetric fistula.** The tragedy of obstetric fistula remains a major health and human rights challenge. For years, the global community has struggled to generate robust data on the burden of fistula. Such data are sorely needed for evidence-based planning and programming, to ensure that all survivors receive the care they need and help countries to measure progress in preventing and eliminating fistula. UNFPA, which leads the United Nations system's global Campaign to End Fistula in partnership with the Johns Hopkins Bloomberg School of Public Health, is currently piloting a statistical model to generate global and country-specific estimates of fistula incidence and prevalence. The model will be applied in 2016 to the more than 50 countries supported by the Campaign to End Fistula in order to produce new United Nations global estimates. These critical and long-needed data constitute a major step forward globally and a critical tool in the hands of countries to enable them to significantly advance their planning, implementation and monitoring efforts.

47. **Supporting community health workers with mobile applications.** In 2015, UNFPA hosted its first global hackathon in Uganda, in partnership with the Massachusetts Institute of Technology, where partners from 17 countries generated mobile health prototypes to promote adolescent sexual and reproductive health. The "GetIn" mobile application is a tool to be used by community health workers to map households where pregnant girls reside. Information captured during home visits is fed into a secure database, through which SMS message alerts are sent to health-care workers, young pregnant women and young mothers with health information and appointment reminders. A prototype of the application will be available in March 2016.

48. **Promoting better sexual and reproductive health-care services for young people.** In June 2015, loveLife South Africa, supported by the German Development Bank, launched a new mobile platform for young people, namely, iloveLife.mobi. This online mobile website serves as a hub for young people, providing them with information and helping them to access adolescent and youth-friendly services, thereby rewarding them directly with real-world incentives for health-seeking behaviour. As young people complete activities, such as taking an HIV test or adopting a family planning method, they earn points and enter competitions. Building on this platform, UNFPA South Africa and loveLife are augmenting the iloveLife.mobi with a widget that will include a health-care facility locator and rating system. Health-care providers then receive feedback on services they provide through a mobile platform, which gives them an opportunity to share valuable lessons and information. The georeferenced health system ratings will be used to strengthen clinical services for young people and will be integrated into a training programme for providers.

49. Lastly, demographic data play a critical role in the estimation of health resource needs. Global, national and subnational strategic planning, resource estimation and costing exercises seek to identify strategies to increase health coverage despite budget constraints and, in the context of the Sustainable Development Goals, ensure universal access to sexual and reproductive health. The Global Investment Framework for Women's and Children's Health has demonstrated how investments in women's and children's health result in high health, social and economic returns. This analysis used demographic projections and population dynamics related to family planning to examine the health system needs for scaling up coverage of maternal and newborn health, child health, immunization, family planning, HIV/AIDS, malaria and nutrition. The research concluded that increasing health expenditure by just \$5 per person per year up to 2035 in 74 high-burden countries could yield up to nine times that value in economic and social benefits.¹⁵

C. National and subnational mapping of population data

50. The visual display of population data across space and time can have potent effects on the public understanding of demographic trajectories and of where citizens in a country are faring better or worse in different dimensions of health and development. As more census and survey data are now georeferenced, UNFPA has

¹⁵ Karin Stenberg and others, "Advancing social and economic development by investing in women's and children's health: a new Global Investment Framework", *Lancet*, vol. 383, No. 9925 (April 2014).

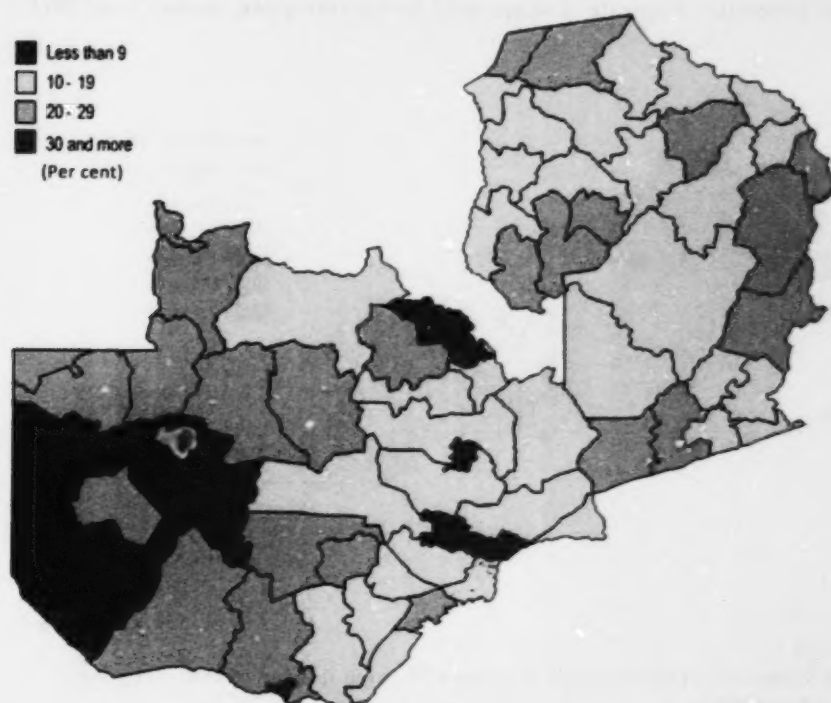
supported Governments in using a combination of those sources for small area mapping and small area estimation of critical indicators, including visual displays of data in dashboards that enable partners to extract simple but compelling figures and maps of population trends and needs at the national and subnational levels.

51. For example, efforts to support family planning in the Eastern European and Central Asian region have been strengthened by building the capacities of UNFPA country offices in data collection and utilization. In particular, a regional family planning dashboard institutionalized in 2015 serves as a dynamic and flexible mapping tool incorporating 25 different demographic, health and economic indicators. The database for all 17 Eastern European and Central Asian countries was populated from pre-agreed sources, with UNFPA supporting countries in reading and validating data from the demographic and health survey, the multiple indicator cluster survey and related sources. The consultative process was key to building capacity and ensuring ownership and national use of the output. The dashboard provides countries with a reliable, international-standard system for generating up-to-date data presentations that can be fully or partially exported into different platforms, including Word, Excel and Microsoft PowerPoint (see www.dataforall.org/dashboard/unfpa/family_planning/).

52. In several areas of interest relevant to the Framework of actions for the follow-up to the Programme of Action of the International Conference on Population and Development beyond 2014 and the 2030 Agenda, such mapping exercises have proved valuable in engaging Government leaders in recognizing and responding to population needs. For example, the UNFPA country office in Zambia has, with other partners, supported the development of a national strategy to end child marriage, using evidence gathered from a recent subnational analysis. In 2014, UNFPA provided hands-on training and technical backstopping to the Central Statistical Office for analysis of the 2010 population and housing census. The resulting theme-based and area-specific maps (at the national, provincial, district, constituency and ward levels) revealed areas with a high incidence of forced and early/child marriages, as well as correlated socioeconomic factors. The map below illustrates districts where a comparatively high proportion of girls experience a combination of known risk factors for child marriage (see figure II). The policy and programme-relevant evidence provided impetus to the Government and partners to scale up the national campaign to end child marriage. The skills transferred to the Central Statistical Office continue to be evident in subsequent analysis of the 2014 demographic and health survey.

Figure II
Zambia: Girls at risk of child marriage

Percentage of never-married girls aged 10 to 17 living with neither parent or with their mother only, from the poorest 40 per cent of households, 2010 Zambia population census



53. **Small area estimation.** One of the challenges of using data to ensure that family planning services, including commodity flows and providers, are available to populations in greatest need is the estimation of key family planning indicators at low administrative levels. Most of the data used for family planning analysis in the developing world are collected through household surveys, but sample limitations allow only for data disaggregation at the regional level and, in a few cases, at the provincial/state level. Where both census and demographic and health survey data are available, UNFPA generates small area estimations through regression models to estimate family planning indicators at the district and municipality levels, including the contraceptive prevalence rate, the rate of unmet need for contraception and the proportion of demand satisfied.

54. The resulting small area estimation maps for Nepal are shown in figures III and IV below. Figure III provides the 2015 district-level estimates of the rate of unmet need for contraception and figure IV provides the absolute number of women in need of contraception. Depending on the indicator chosen, different districts are highlighted, allowing policymakers to direct interventions to locations where the highest number of women may be in need or to districts where smaller absolute numbers of women are living but where a higher proportion are in need of family

planning services. Small area estimation methods are used by UNFPA for a wide range of other subnational analyses, including mapping integrated population vulnerabilities in health, reproductive rights and climate hazards, for which high resolution data are essential for targeted programming.

Figure III

Nepal: Estimates of the rate of unmet need for contraception, district level, 2015



Figure IV

Nepal: Estimates of the absolute number of women in need of contraception, district level, 2015



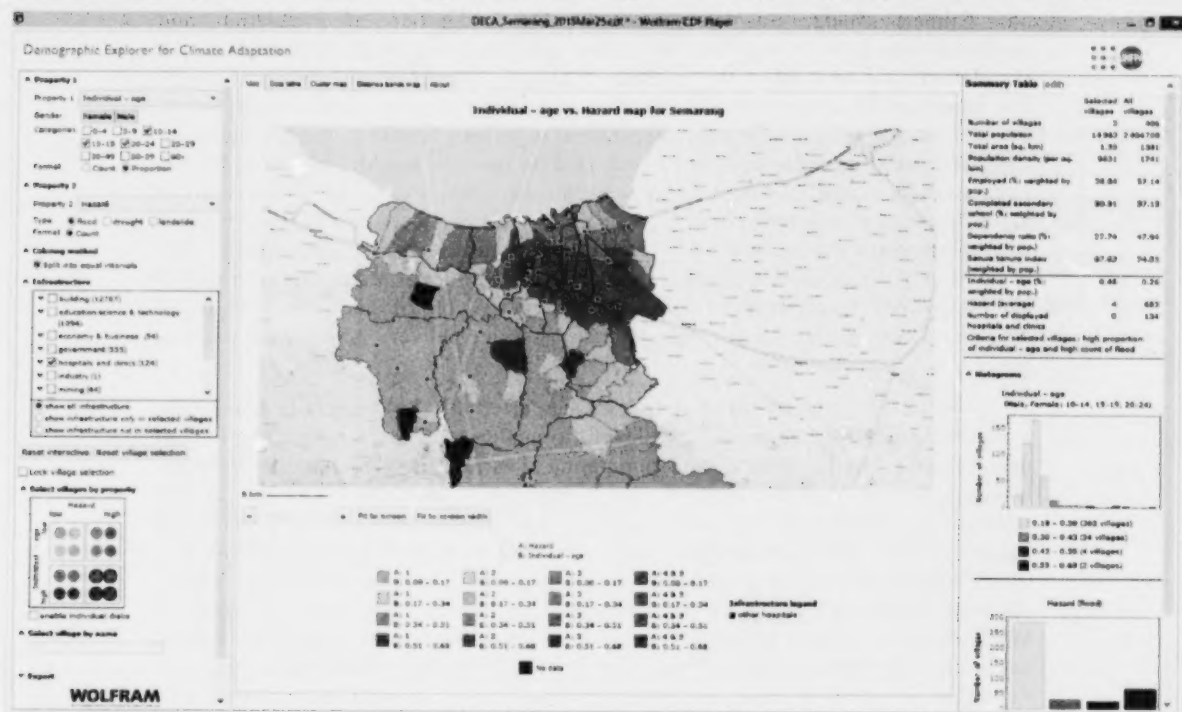
D. Persons vulnerable to climate change

55. Climate change adaptation requires the integration of population and environmental data through the use of the spatial data systems described above. Population vulnerability to climate change encompasses the immediate consequences of environmentally related crises, but also the gradual erosion of livelihoods and related consequences, including poverty, conflict and/or migration. Climate-related hazards, both acute and chronic, are geographic in nature; hence, population vulnerability data need to be examined at lower geographic levels, given the differences in environmental threats across small distances. UNFPA has worked with Indonesia, Jamaica, Malawi, Maldives, and Saint Lucia, using population data to improve policies on climate change adaptation, with a particular focus on people and households. Georeferenced census data are at the core of this work, with added data on environmental hazards, infrastructure, service delivery points, land use and poverty.

56. The UNFPA country office in Bolivia supported the Government in developing a similar study, at the municipal level, to understand the socioeconomic and demographic determinants of the population's vulnerability to natural disasters. Using Bayesian factorial analysis, the methodology combined qualitative data relating to perception of vulnerability and uncertainty with census-based socioeconomic and demographic data. The resulting methodology allows the identification of a regional vulnerability index as well as the contributing factors, allowing the prioritization of risk-prevention initiatives and the localization of humanitarian response. Maps and results are already integrated within the official territorial information system. These new population analyses can help to minimize the threat of natural disasters and to concentrate humanitarian aid in the event of a disaster.

57. In general, capacity in geographic information systems (GIS) is limited in many contexts, especially at the subnational level, and spatial analysis is time-consuming. The "Demographic Explorer for Climate Adaptation" model, which was developed as part of the work of UNFPA with Indonesia and Malawi, is an automated spatial analysis tool designed to bridge such capacity gaps and help policymakers to generate useable analysis quickly (see figure V below, which shows young people in flood risk areas in Semarang, Indonesia, coupled with a wide range of descriptive statistics). The use of the Demographic Explorer for Climate Adaptation is currently expanding to Jamaica and Saint Lucia.

Figure V
Demographic Explorer for Climate Adaptation: Semarang, Indonesia, young people in flood risk areas



E. Population data innovations in unstable circumstances

58. Instability and insecurity are on the rise¹⁶ in ways that are incredibly challenging for traditional data systems to address. In such settings, it may be impossible to collect new census information and available data may quickly be outdated if instability leads to mass movements of people. Surveys may exclude certain zones of a country and the population situation may be changing too quickly to rely solely on infrequently collected data sources. As a result, there is growing enthusiasm for innovations around big data to provide real-time estimations of the number and locations of people. Big data reflect the explosion in the quantity and diversity of high-frequency digital data, including call logs, mobile-banking transactions, online user-generated content such as blog posts and Tweets, online searches and satellite images. In 2015, UNFPA hosted a “big data bootcamp” bringing together UNFPA data specialists, the private sector, United Nations agencies and global big data experts. Among the key results has been an increase in partnerships with organizations combining a wide range of data, including traditional, satellite and big data.

¹⁶ See Office of the United Nations High Commissioner for Refugees, “Global Trends: Forced Displacement in 2014”, available from <http://unhcr.org/556725e69.html>.

59. One country where such innovative data have been applied in unstable circumstances is Afghanistan. The last census of Afghanistan was done in 1979, and security concerns have prevented a more recent one. The Government of Afghanistan requested the help of the United Nations in estimating the population. Building on the big data Bootcamp, UNFPA provided technical support in collaboration with Flowminder, an organization that collects, aggregates, integrates and analyses anonymous mobile operator data, satellite data and household survey data. Analyses by Flowminder have already enabled the mapping of the distribution and characteristics of vulnerable populations in a wide range of countries, starting with the post-earthquake population in Haiti a decade ago. UNFPA and Flowminder are collaborating in Afghanistan to generate maps of the population using an ongoing sociodemographic survey, satellite imagery, other remote sensing data, urban data and GIS statistical modelling.

60. In Latin America and the Caribbean, UNFPA is building a mobile-ready web-based and georeferenced application, which will be available to United Nations agencies and partners to gather and deploy sociodemographic data in real time during humanitarian crises; the project is also serving to develop national capacities to better produce and use population data for humanitarian response. The system merges the online indicator calculator "Minimum Initial Service Package (MISP) for Reproductive Health in Crisis Situations" and the *Guidelines for the Collection and Analysis of Socio-demographic Data in Humanitarian Crisis Situations in Latin America and the Caribbean*.¹⁷ The application will utilize a database that represents a consolidation of information at the national level and the most local level available.

61. In humanitarian crises, responders in the field can use a phone application to quickly select a particular geographic area on a map through a simple finger touch and immediately receive population data estimates for that geographic area, allowing a rapid estimation of the number of persons affected, which can be critical for planning and resource distribution. Using mobile devices, users can also upload pictures with geographic coordinates as evidence-based references for a timely response in key locations and to guide deliveries. Stakeholders from 10 countries are currently validating and finalizing the application for deployment.

IV. The way forward: strengthening national data ecosystems

62. The challenge of strengthening national statistical systems has been recognized within the context of targets 17.18 and 17.19 of the Sustainable Development Goals, but the scope and complexity of needed investments will be difficult to capture within a few key indicators. Moreover, the challenges faced by countries differ and should be addressed in a differentiated way.

63. It will nevertheless be critical for all countries to raise the political priority of national population data ecosystems, develop national monitoring agendas for the implementation of the Programme of Action of the International Conference on Population and Development and the Sustainable Development Goals and address the challenge of identifying people who are most in need of development

¹⁷ At the request of country offices in Latin America and the Caribbean, the *2010 Guidelines on Data Issues in Humanitarian Crisis Situation* were adapted to the regional context in 2014.

interventions owing to social, economic, environmental, cultural or spatial exclusion. For some countries, an initial capacity assessment and the development of a national population statistics plan and/or related legislation may be warranted, under the scope of the capacities required for target 17.18 of the Goals.

64. Achieving the desired level of national statistical capacity by 2020 will also require financial mechanisms that progressively increase national investments in data and prioritize long-term growth of institutional capacities for generation and use of the census, civil registration and vital statistics, administrative records and new sources of data. Greater availability and use of geospatial data will be essential for locating those in need, and the building of robust administrative data that are accessible to decision makers will allow countries to receive rapid feedback on whether interventions are working or not and where emerging needs warrant attention. The growing demand for higher education across the world speaks to the opportunity for training a next generation of population experts, ideally with the integrated, human-rights-based vision of development crafted within the Programme of Action of the International Conference on Population and Development and the 2030 Agenda.

65. A new strategy that will increase national capacity for the use of census data is needed for the 2020 census round. This strategy should be centred within a broader package of regional and South-South centres of excellence that not only promote partnerships for the affordable generation, dissemination and analysis of census data in all countries, but provide greater support to the strengthening of national capacities for the use of census and all related population data by national statistical offices, academics and civil society.

66. Lastly, building a knowledge society and ensuring the informed use of reliable population and development data by citizens and their Governments must be the ultimate goal of future investments. Discussions on the data revolution in the course of 2015 have understandably focused on the monitoring of and reporting on the achievement of the Sustainable Development Goals, given the endorsement of this ambitious and potentially transformative agenda. The emphasis on strengthening demographic data in the coming 5 to 15 years must be directed towards the enhancement of the national data ecosystems and institutions that will provide longer-term value for development. All countries will collate and provide Sustainable Development Goal indicators for global frameworks; yet, the greater aim should be that all countries have the capacity to summarize and use such national data and to share that data with the public, for their collective development.

67. The emphasis on national ownership of data is critical to the way forward, for it underscores the importance of not only supporting countries in generating data to be used and analysed by others, but ensuring that the definition of national success includes the establishment of a vibrant sector of data professionals, within national statistical offices, academia and civil society, who have been trained through strong national institutions, regional centres of excellence and public-private partnerships and can use population data to monitor progress, identify gaps and shortfalls and advance the goals of dignity and human rights, equality, good governance and the protection of the environment, which are central to the fulfilment of the Programme of Action of the International Conference on Population and Development and the Sustainable Development Goals.



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**Actions for the further implementation of the Programme
of Action of the International Conference on Population
and Development**

Monitoring the flow of financial resources to support the implementation of the Programme of Action of the International Conference on Population and Development

Report of the Secretary-General

Summary

The present report was prepared by the United Nations Population Fund.

The international community is on the threshold of a new era. With the adoption of the Sustainable Development Goals, Member States are charting a course for post-2015 and finalizing a new sustainable development framework. The 2030 Sustainable Agenda incorporates many of the values and vision of the Programme of Action of the International Conference on Population and Development, including the integrated challenges of poverty, health, education, decent work, gender equality, women's empowerment and the environment, and the centrality of equality and human rights to the fulfilment of sustainable development.

The initiation of the present report on the flow of financial resources to support the implementation of the Programme of Action of the International Conference on Population and Development was requested at the twenty-eighth session of the Commission on Population and Development. It was focused on the resource flows to: family planning; basic reproductive health services; sexually transmitted diseases/HIV and AIDS prevention activities; and basic research, data and population and development policy analysis. As such, the analysis of the flow of financial resources for the implementation of the Programme of Action, duly reported since 1997, has

* E/CN.9/2016/1.



not, from the outset, embraced its full, far-ranging objectives and actions, but has focused on resource flows to support dimensions of reproductive health. This focus had particular value in the first decade following 1994 to monitor donor and domestic commitments to the paradigm shift of the 1994 Programme of Action of the International Conference on Population and Development identifying reproductive health and rights as a cornerstone of sustainable development.

Today, as trends in both donor and domestic funding have become increasingly integrated across multiple dimensions of health and the health sector, for example, through the establishment of the Global Fund, sector-wide approaches and basket funding for the health sector, and as there has been a growing effort to mainstream the delivery of reproductive health services, including HIV testing and care, within all levels of health-care services, the distinctions between resource flows to basic reproductive health services, sexually transmitted infections and HIV, and family planning have become increasingly blurred, undermining the precision and reliability of these estimates.

Given these concerns regarding the declining precision and reliability of the estimates regarding resource flows to the initially costed package, it is hereby recommended that the Commission review and provide future direction of the annual CPD report on *The Flow of Financial Resources for Assisting in the Implementation of the Programme of Action of the International Conference on Population and Development*.

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I. Introduction

1. The United Nations Population Fund (UNFPA) has been reporting on donor and domestic financial resources for population activities in developing countries since 1997. The reports were prepared in response to a request by the Commission on Population and Development at its twenty-eighth session (see E/1995/27) for an annual report on the flow of financial resources for assisting in the implementation of the Programme of Action of the International Conference on Population and Development held in Cairo in 1994. The reports were part of the work programme of the Commission on Population and Development from 1996 to 2015 and were submitted in accordance with General Assembly resolutions 49/128 and 50/124, in which the Assembly called for the preparation of periodic reports on the flow of financial resources for assisting in the implementation of the Programme of Action.

2. UNFPA initiated the resource flows project in 1997 and chose the Netherlands Interdisciplinary Demographic Institute as its main partner to gather information on funding for population activities. The Joint United Nations Programme on AIDS (UNAIDS) collaborated with UNFPA and the Demographic Institute from 1999 to 2006. With a view to building regional capacity to monitor financial resource flows and to ensure the sustainability of the project, the Indian Institute of Health Management Research joined the collaboration in 2005, followed in 2011 by the African Population and Health Research Center.

II. The resource flows project

3. The resource flows project tracked financial resource flows based on a "costed population package" as described in paragraph 13.14 of the Programme of Action of the International Conference on Population and Development: (a) family planning services; (b) basic reproductive health services; (c) sexually transmitted diseases/human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) prevention activities;¹ and (d) basic research, data and population and development policy analysis.

4. To ensure adequate funding for the implementation of the Programme of Action, UNFPA reviewed the original financial targets in 2009 for the four categories of the costed population package and produced revised estimates to meet current and emerging needs and costs. The revised estimates, which were presented at the forty-second session of the Commission on Population and Development in 2009, were much higher than the original targets of the Conference agreed upon in 1994 because they took into account both current and emerging needs and costs, and interventions, such as AIDS treatment and care, and reproductive cancer screening and treatment, that were not part of the original costed package.

5. The core data for estimating Resource Flows Project has come from two surveys,² and from the Organization for Economic Cooperation and Development

¹ As of 2008, to ensure one AIDS figure, all data on HIV/AIDS expenditures were obtained directly from UNAIDS using the broader AIDS definition.

² Hagedoorn P, Beets G (2011). *The role of the Resource Flows Project in the field of resource tracking for health*. Background paper on the current initiatives in the field of resource tracking for population and health, and the position of the Resource Flows Project in this field. Netherlands Interdisciplinary Demographic Institute (NIDI).

(OECD) Creditor Reporting System. The two surveys were directed to: (a) donor countries and organizations; and (b) Governments and organizations within a given country. Both surveys solicit financial data for population activities at the project level, and have been collected annually. The donor questionnaire was sent to about 130 organizations, representing the major donors that support population activities³ and AIDS, including donor countries that were part of the database of the Development Assistance Committee of OECD, as well as those outside it, including multilateral organizations and agencies, major private foundations and other international non-governmental organizations (NGOs) that provided substantial population assistance. Data on AIDS expenditures were obtained directly from UNAIDS.

6. Most information on major donors was obtained from the OECD/DAC database. The OECD Creditor Reporting System database is a much-used source for tracking donor funding, because data is collected at a project level. However, because the OECD aggregates data to large subsectors of health, categories do not necessarily provide very detailed information on the focus or content of health projects. Hence, for countries and multilateral organizations included in the OECD/DAC database, the project data extracted from the Creditor Reporting System was complemented by the survey that sought additional information on resource flows for subcategories of reproductive health and AIDS that are not coded within the that database. A methodology was developed in agreement with OECD whereby projects directed to population activities are selected from the Creditor Reporting System database based on some of the specific codes that OECD uses to classify projects to a given sector. Codes include the estimated percentage of the project directed to population and AIDS. If projects are designated for reproductive health care, then 100 per cent is included. If projects are designated for basic health care, then the proportion devoted to population and AIDS is estimated to be 10 per cent; the basis for the estimate of 10 per cent is unclear.

7. The resource flows project has been unique in translating Creditor Reporting System codes to capture specific dimensions or categories of the International Conference on Population and Development, in this case, family planning services; basic reproductive health services; sexually transmitted diseases/human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) prevention and treatment activities; and basic research, data and population and development policy analysis.

8. One limitation of the OECD/Creditor Reporting System database is that, in order to avoid double counting, only one sector code can be assigned to each project. Hence, in cases in which a given project serves multiple sectors (health, infrastructure, etc.), only the sector receiving the highest proportion of funding receives the code for the overall project.

9. For major donor organizations not included in the Creditor Reporting System database, such as the foundations and NGOs, data was collected solely by questionnaire, requesting information about resource flows at the project level. General (non-earmarked) funds were difficult to track, so the questionnaires included a request that major multilateral organizations estimate the percentage of

³ UNFPA/NIDI (2008), *The Resource Flows project, Overview and assessment of the data collection process*. Background document for the Resource Tracking Expert Group meeting, New York, 18 November 2008.

their general contributions that go to population activities, and how much of that goes to HIV/AIDS.

10. The resource flows project collected its own data on domestic funding through a survey sent to Governments and NGOs, accompanied by a survey on the national budget completed by the UNFPA country office. A representative of UNFPA completed the questionnaire on the total relevant resource flows of a country, including funding from donors, the domestic government, and private funding by resident sources of the country, and about regarding population activities excluding HIV/AIDS. Data on domestic spending on HIV/AIDS is collected directly from UNAIDS.

11. Although most Governments made every effort to provide the requested information, many were often unable to supply data because of funding, staffing and time constraints. In addition, countries that did not have well-developed systems for monitoring resource flows were unable to provide information, especially given the increasing emphasis on integrated funding, in which funding was pooled within a sector, namely, sector wide approaches, or in large multi-sectoral projects.

12. Domestic resource flow data were always rough estimates because they were often incomplete and not entirely comparable. Most countries with decentralized governments did not have accounting systems that could easily provide information on expenditures for population at subnational levels. While the figures show the overall commitment on the part of developing countries, they concealed the great variation that existed between countries in their ability to mobilize resources for population activities. Most domestic resource flows originated in a few large countries. Many countries, especially those in sub-Saharan Africa and the least developed countries, were not able to generate sufficient resources to finance their own population programmes and relied heavily on donor assistance.

13. The sample of developing countries included within the Netherlands Interdisciplinary Demographic Institute estimates has varied over time, but includes only countries represented by a UNFPA country or regional office. A rotating system was used initially, but a sample of approximately 105 countries has been chosen more recently, on the basis of population size, data availability and geographic balance.

Imperfect categories

14. A growing challenge has been the lack of analytical clarity and distinction between the four categories initially identified, even following revisions in 2009. The growing trend towards integration of services and the use of sector-wide approaches in development assistance has made it increasingly difficult to readily distinguish between expenditures for population and other health-related activities and, within population, between family planning, reproductive health and sexually transmitted disease/HIV/AIDS activities, diminishing confidence in the precision and reliability of the generated estimates on resource flows, both in absolute terms each year, and in terms of the trends in funding year-to-year. In numerous official development assistance and domestic resource commitments family planning is not easily distinguished or separated from basic sexual and reproductive health care, and therefore, expenditures are often lumped together or artificially separated during the estimation exercise. Likewise, sexually transmitted diseases/HIV/AIDS prevention and treatment activities are sometimes funded as part of basic sexual and

reproductive health-care services, and global advocacy to improve service delivery through better integration of sexual and reproductive health and HIV and AIDS services has further inadvertently diminished the ability to estimate distinct resource flows for these categories.

15. For example, in a detailed national review of funding from the Global Fund, a donor that is included within the Resource Flows Project survey, analysts tried to distinguish the extent of national support for the integration of sexual and reproductive health and rights within HIV and AIDS from January 2009 to December 2011, and concluded that a large proportion of active Global Fund HIV-AIDS grants were being expended on activities that supported the integration of sexual and reproductive health services, either directly or indirectly (12-100 per cent),⁴ illustrating the challenge of distinguishing between categories in which integration is encouraged. The category of basic reproductive health services was further divided into the four subcategories of: maternal health; abortion; reproductive tract infections (RTIs), cancers of the reproductive system and other reproductive morbidities; and promoting sexual health.⁵

16. The fourth category, "basic research, data and population and development policy analysis", while reliably distinct from family planning, basic sexual and reproductive health care, or the prevention of sexually transmitted diseases, including HIV/AIDS, is nonetheless not well defined. Estimations of overall investments in the collection of single population data sources such as the census, the demographic and health surveys or multiple indicator cluster surveys, can be reliably measured, but domestic support for civil registration and vital statistics, for example, would be more challenging to distinguish. Resources invested in population-related research or training within universities or population research centres are likewise more difficult to distinguish if these are embedded within larger institutional budgets. Finally, it is difficult to estimate what is spent on population and development policy analysis, given that much of this work occurs within the budgets of large university institutions or research centres, or as a subset of work within large bilateral or multilateral agencies.

17. Each year, UNFPA presents its findings in the report of the Secretary-General on the flow of financial resources for assisting in the implementation of the Programme of Action of the International Conference on Population and Development, which is submitted to the Commission on Population and Development. The Fund has also prepared a number of other documents, including the annual report on financial resource flows for population activities; the advocacy brochure, *Financing the ICPD Programme of Action*; and five regional advocacy brochures. The Netherlands Interdisciplinary Demographic Institute prepared annual projection reports, newsletters focusing on current issues, and periodic thematic reports on such topics as out-of-pocket expenditures, and reproductive health sub-accounts.

⁴ Mookherji S, Ski S, Huntington D (2015) Tracking Global Fund HIV/AIDS resources used for sexual and reproductive health service integration: case study for Ethiopia. *Globalization and Health*. 11:21. DOI 10.1186/s12992-015-0106-z.

⁵ Distinctions between sexually transmitted infections (listed among the initial categories), and reproductive tract infections (in the subcategory of basic reproductive health), are unclear.

Important tool for advocacy

18. The financial flow reports were intended to be a tool for donor and developing country Governments, multilateral organizations and agencies, private foundations and NGOs to monitor progress in achieving the financial resource targets agreed to at the International Conference on Population and Development, to identify donor and domestic funding gaps and to coordinate financing of key elements of the Programme of Action. Development cooperation officers and policymakers in developing countries were encouraged to use the reports to identify the domestically generated resources and complementary resources from donors needed to finance key elements of the Programme of Action.

19. Users of these data have included a number of stakeholders — bilateral and multilateral institutions and donors working in sexual and reproductive health, civil society and advocates, and Governments themselves. Donors and Governments have shown interest in knowing how their own spending on these areas related to the International Conference on Population and Development compared to that of others, but civil society has been the most visible and consistent user of these data for national, regional and global advocacy for Governments and donors to provide the resources needed to fulfil the commitments of the Programme of Action. For example, as the proportion of resources allocated to HIV and AIDS increased dramatically, civil society has used the resource flow data to argue for greater commitments to integrated resources and programming, to ensure that HIV and AIDS was not funded at the expense of sexual and reproductive health, but in a synergistic manner. The importance of reliable data on resource flows is undeniable for sustaining advocacy for the agenda of the International Conference; from an advocacy perspective overall trends may be arguably more important than precise figures, but those trends require constant and reliable methods of estimation over time.

20. The Commission on Population and Development may wish to consider potential alternative approaches to resource flow reporting, including alternate categories of commitments related to the International Conference on Population and Development that would offer less concern with overlap or blurred distinctions, and/or address specific deficits in global investment. In the former case, a category on resource flows specific to the purchase and distribution of family planning commodities, which UNFPA is currently tracking with the Netherlands Interdisciplinary Demographic Institute, appears to offer greater specificity. With regard to neglected concerns, resources devoted to the screening, diagnosis and treatment of sexually transmitted infections other than HIV may warrant exploration. Such investments have been eclipsed within the former category of sexually transmitted diseases/HIV and AIDS, yet represent an area of limited programmatic development since the International Conference, and a new World Health Organization strategy on sexually transmitted diseases is anticipated in 2016. Any and all potential resource flow categories warrant piloting within the existing data sources for official development assistance; new categories under the International Conference may be identified that better align with the current structure of programme investments, and additional areas of work under the International Conference may be reconsidered for tracking of resource flows to fulfil the Programme of Action.

III. Alternate methodologies

21. When UNFPA and the Netherlands Interdisciplinary Demographic Institute initiated the Resource Flows Project in 1997, there were few alternative methods for tracking donor contributions to specific themes and targets. Since then, a range of new monitoring projects has emerged. Several papers review the range of tracking initiatives used to monitor global aid,⁶ several with particular attention to the field of health.

22. The OECD/Development Assistance Committee database continues to be a widely used resource for those tracking broad categories of development aid among major bilateral donors, and as in the Resource Flows Project, is sometimes used in tandem with other sources. For example, the Development Assistance Committee of OECD has been used in combination with the Financial Tracking Service to track resource flows to support reproductive health within humanitarian emergencies.⁷

23. With regard to domestic resources, increasing emphasis has been placed on strengthening national capacity for developing health registry data, and establishing stronger financial monitoring for national ownership and use.⁸ Within the health sector, this is manifest in the increasing emphasis on supporting Governments for the generation and use of national health account estimates, which were founded on the OECD System of Health Accounts, and regarding these estimates as the optimal source for national and global tracking.⁹ The national health account relies on a wide-ranging collection of data from Governments, insurers, NGOs, social security agencies, private and public health-care providers, among others, supplemented by surveys and interviews to cover any obvious gaps in information. As such, generating a national health account provides an important opportunity for a given country to take stock of current sources of health system data, and identify gaps and priorities for investment. National health accounts are only conducted every few years, yet they are a valuable mechanism to directly strengthen health sector data in countries, and provide a future source of data for domestic resource flows.

24. Adding It Up¹⁰ examines the shortfall in sexual and reproductive health services relative to needs and estimates the added cost of providing a package of such services for all sexually active women and their newborns. The 2014 report suggests that fully meeting the need for modern contraceptive services would cost

⁶ Eiseman, E. and D. Fossum (2005), "The Challenges of Creating a Global Health Resource Tracking System", RAND Corporation, Santa Monica. Center for Global Development (2007), "Following the money: towards better tracking of global health resources". Report of Global Health Resource Tracking Working Group. Center for Global Development, Washington, D.C. Powell-Jackson, T. & A. Mills (2007), A review of health resource tracking in developing countries. In: *Health Policy and Planning*, Advance Access published 20 July 2007 (doi:10.1093/heapol/czm024).

⁷ Patel P, Roberts B, Guy S, Lee-Jones L, Conteh L (2009), Tracking official development assistance for reproductive health in conflict-affected countries. *PLoS Med* 6(6): e1000090 doi: 10.1371/journal.pmed.1000090.

⁸ Powell-Jackson, T. & A. Mills (2007), "A review of health resource tracking in developing countries" in *Health Policy and Planning*, advance access published 20 July 2007 (doi:10.1093/heapol/czm024).

⁹ Ibid.

¹⁰ Singh, Susheela, Jacqueline E. Darroch and Lori S. Ashford (2014), "Adding It Up: The Costs and Benefits of Investing in Sexual and Reproductive Health 2014". Guttmacher Institute and UNFPA.

\$9.4 billion. Recommended levels of maternal and newborn health care for all women who have a live birth would cost \$21.7 billion. Care for women whose pregnancies end in miscarriage, stillbirth and abortion (assuming no change in laws) would cost \$2 billion. HIV and other sexually transmitted infections would cost approximately \$6 billion. This estimated investment of \$39.2 billion (in total) is approximately twice the estimated current levels of global investments for those services.

25. There are at least two contradictory limitations to these estimates. On the one hand, the true costs of scaling these services would be higher than the estimates provided, because the analysis imagines a world where the coverage of sexual and reproductive health care jumps suddenly from current levels to universal coverage, not accounting for the capital investments required to enable universal coverage. The estimates include recurring costs only, and do not include adjustments for the requisite capital infrastructure needed to expand inpatient and outpatient facilities and their full operating costs, laboratories, major equipment, and the like, to bring coverage from current to universal levels. Given the weaknesses in health system infrastructure in many of the poorest countries, where the gap in services is greatest, the added costs would likely be significant.

26. On the other hand, the estimates fail to adjust for the synergies and positive health effects, and hence the potential health cost savings, implicit in universal coverage. For example, if all the unmet needs for family planning were addressed, the demand for maternal and newborn health care and post-abortion care would be lower, leading to significant cost savings. Likewise, if quality information on sexually transmitted infections, including HIV, were universally available, condoms fully accessible, quality sexually transmitted infection screening and treatment services available in all primary health services, the secondary health effects of such infections would be vastly diminished. Hence, rigorous estimations of the costs required to achieve universal sexual and reproductive health care coverage demands more attention, not only to estimated recurring costs, but to the full costs and savings anticipated by a high-quality universal sexual and reproductive health-care system.

27. Further, "Adding It Up" suffers from some of the same limitations associated with the UNFPA/Netherlands Interdisciplinary Demographic Institute estimations of resource flows methodologies associated with the International Conference on Population and Development; namely, it looks only at sexual and reproductive health services. It neglects the costs and potential savings of supporting critical aspects of the demand for sexual and reproductive health services and for eliminating the major determinants of the burden of it, including promoting, protecting and fulfilling reproductive rights, eliminating sexual violence, ensuring gender equality and women's empowerment, and eradicating harmful practices, including child marriage and female genital mutilation. Even securing the fulfilment of the reproductive rights affirmed in the 1994 Programme of Action would reduce the burden of sexual and reproductive ill-health and the corresponding cost of ensuring universal sexual and reproductive health-care services. Resource flow estimations for universal sexual and reproductive health care may offer greater value if they attempt a broader costing exercise that would, at a minimum, include the combined costs and savings of both universal access to such care and the fulfilment of reproductive rights as outlined in the Programme of Action.

28. None of the available costing exercises attempt to estimate current or needed resource flows to fulfil anything close to the broad and comprehensive agenda of the International Conference on Population and Development, including investments in national population data ecosystems, resources for displaced and mobile populations, reaching key populations with special vulnerabilities in sexual and reproductive health and rights, ensuring that all young persons reach their potential, supporting healthy old age, ensuring inclusive urbanization, and other related pillars of the 1994 Programme of Action. Admittedly, the scope of the Programme of Action is too wide to make such a costing exercise feasible in total, but the Commission on Population and Development may want to use the interruption in the current resource flow estimations to reflect on the optimal scope of future estimations.

IV. The way forward

29. The Programme of Action of the International Conference on Population and Development remains a landmark international agreement affirming widespread support across diverse societies for the principle that investing in individual human rights, capabilities and dignity, across multiple sectors and through the life course, is the foundation of sustainable development. These principles were affirmed and elaborated in follow-up reports to the Conference and are echoed throughout the 2030 Sustainable Development Agenda, with explicit targets to be achieved over the coming 15 years.

30. The overlap in vision and values between the Conference beyond 2014 and the 2030 Agenda is substantial, yet while the 2030 Agenda is time bound, the commitments to fulfil the Programme of Action stand in perpetuity.

31. The resource flows project has provided important expertise to the refinement of the overall methodology, including the 2009 adjustments in the definition of categories, but the progressive integration of development aid has diminished the reliability of the current categories. The interruption of the resource flows project data, and potential revisions in the approach, will diminish the opportunity to compare future year-to-year changes in estimated resource flows with those reported from 1997 to 2014, but reaffirming the purpose and reliability of the estimations is ultimately of primary importance. Hence, from an analytical perspective, the Commission is encouraged to undertake a review and provide future direction for monitoring and reporting on the flow of financial resources to support the implementation of the Programme of Action of the International Conference on Population and Development.

32. The international community stands at the threshold of a new era in which development reporting and monitoring systems are being reviewed and newly crafted to measure progress, track the fulfilment of past and new commitments, and evaluate the universality of achievements for the 2030 Agenda. The Sustainable Development Goals indicator framework, including the means of implementation, will be defined and finalized in the course of 2016, and formally agreed upon by Members States during the seventy-first session of the General Assembly in September 2016.

33. Hence, in the light of growing and substantial concerns regarding the declining precision and reliability of the estimates regarding resource flows to the initially

costed package of the International Conference on Population and Development, the Commission is encouraged to reflect on the optimal approach and scope of the annual report of the Secretary-General on the flow of financial resources for assisting in the implementation of the Programme of Action of the International Conference on Population and Development. While national and global frameworks for monitoring development are being renewed, it is an optimal time for the Commission to review future direction of the resource flows project, to ensure the fulfilment of the Programme of Action.



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the Secretariat in the field of population

World demographic trends

Report of the Secretary-General

Summary

The present report, prepared in accordance with Economic and Social Council resolution 1996/2, provides an overview of demographic trends for the world, its major geographic areas and selected countries, and for various development groups. It focuses on the major changes during recent decades and the projected changes during the time frame for achieving the goals of the 2030 Agenda for Sustainable Development. The topics covered by the report include population size and growth, fertility and family planning, mortality, international migration, urbanization and changing population age structures, particularly population ageing.

The world's population was 7.3 billion in 2015, and it is projected to reach 8.5 billion by 2030, with most of the increase occurring in Africa and Asia. Cities will absorb nearly all of global population growth between 2015 and 2030. The population is likely to continue growing during the rest of the century, reaching 11.2 billion by 2100 in the medium-variant projection.

There has been substantial recent progress in lowering child and maternal mortality and in combatting the HIV/AIDS epidemic. Despite this good news, efforts to reduce mortality will need to be sustained and strengthened in order to achieve Sustainable Development Goal 3, which seeks to ensure healthy lives and promote well-being for all at all ages.

* E/CN.9/2016/1.



There is great diversity in recent population trends and their expected future trajectory across countries and major geographic areas, driven primarily by differences in levels and trends of fertility. While some countries will experience a decline in population size between 2015 and 2030, in others the population will increase by over 50 per cent. A difficulty for the achievement of the 2030 Agenda is that much of the population growth between 2015 and 2030 will be concentrated in countries facing the largest challenges in ending poverty and hunger and ensuring health, education and equality for all.

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I. Introduction

1. During the next 15 years the world's population is expected to increase by over 1 billion people, and the international community will face the challenge of enabling the expanding population to achieve higher standards of living while minimizing the negative impacts of human activity on the environment.

2. The demographic trends presented in the present report are based mainly on the results presented in *World Population Prospects: The 2015 Revision*, the twenty-fourth round of the official United Nations population estimates and projections prepared biennially by the Population Division of the Department of Economic and Social Affairs. The report also draws on other databases created and maintained by the Population Division. Data on urbanization and on the size and growth of cities are from *World Urbanization Prospects: The 2014 Revision*. Data on the number and composition of international migrants are from *Trends in International Migrant Stock: The 2015 Revision*. Data about contraceptive use and unmet need for family planning are taken from *World Contraceptive Use 2015* and from *Model-based Estimates and Projections of Family Planning Indicators 2015*. Information about Government policies regarding selected demographic trends is taken from the *2015 Revision of the World Population Policies* database.

II. Population size and projected future growth

3. The global population stood at 7.3 billion in 2015 (table 1). Currently, the world's population continues to grow though more slowly than in the recent past. Globally, the population growth rate peaked in the late 1960s, when the world's population was growing at more than 2 per cent per year. The growth rate has declined continually since that time and today the global population is growing by 1.2 per cent per year, adding approximately 83 million people annually. The population is projected to increase by more than one billion people within the next 15 years, reaching 8.5 billion in 2030, and to increase further to 9.7 billion in 2050 and to 11.2 billion by 2100.

Table 1
Population of the world and major areas, 1950-2100 (millions)

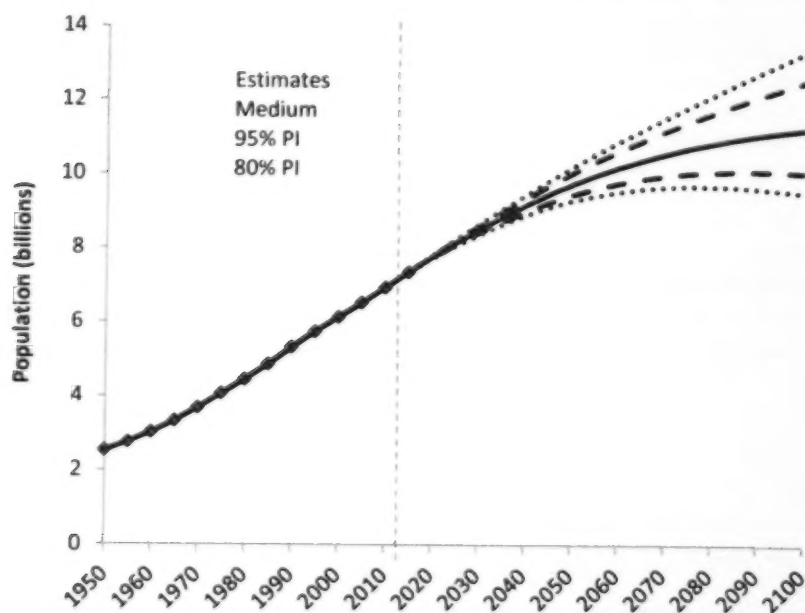
	1950	1990	2015	2030	2050	2100
World	2 525	5 310	7 349	8 501	9 725	11 213
Africa	229	632	1 186	1 679	2 478	4 387
Asia	1 394	3 202	4 393	4 923	5 267	4 889
Europe	549	721	738	734	707	646
Latin America and the Caribbean	169	447	634	721	784	721
Northern America	172	281	358	396	433	500
Oceania	13	27	39	47	57	71

4. Since the 1970s, the global population has grown by about 1 billion people approximately every 12 years. It reached 5 billion in 1987, 6 billion in 1998, 7 billion in 2011, and is projected to reach 8 billion around 2023. The relative constancy of

population increments despite declining growth rates is due to the larger starting population every year — until now, the pace of decline in the population growth rate has been just enough to keep the annual addition to population size close to constant. Increments to the population will start decreasing during the timeline for the Sustainable Development Goals. Adding the ninth billion is projected to take about 14 years; the tenth billion, another 18 years; and the eleventh billion, a further 31 years.

5. As with any type of projection, there is a degree of uncertainty surrounding the most recent United Nations population projections. The results presented above are based on the medium projection variant, which assumes a decline of fertility for countries where large families are still prevalent as well as a slight increase of fertility in several countries with fewer than two children per woman on average. Survival prospects are also projected to improve in all countries. The uncertainty surrounding the median trajectories is accounted for with statistical methods that generate prediction intervals with an associated probability that the actual outcome will be contained therein. For example, one can say with a 95 per cent degree of certainty that the global population will number between 8.4 and 8.6 billion in 2030 and between 9.5 and 13.3 billion in 2100 (figure 1). In other words, the world's population is virtually certain to continue growing over the next few decades. Later in the century, the increase is likely to continue, but there is roughly a 1-in-4 chance that the overall growth of the world's population will cease by 2100.

Figure 1
Population of the world: estimates for 1950-2015 and medium-variant projections, as well as 80 and 95 per cent prediction intervals, for 2015-2100



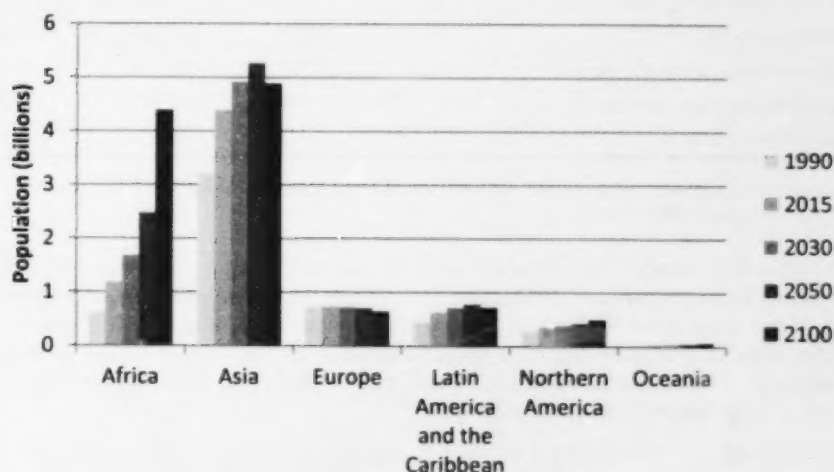
6. The regional dimensions of population growth have important implications for the implementation of the 2030 Agenda for Sustainable Development. In 2015, of the world's 7.3 billion people, 4.4 billion lived in Asia, 1.2 billion in Africa, 738 million

in Europe, 634 million in Latin America and the Caribbean, 358 million in Northern America and 39 million in Oceania (table 1).

7. Figure II shows that the projected growth of the world's population will be spread unevenly across major geographic regions. Between 2015 and 2030, Africa and Asia will each gain about half a billion inhabitants. In Africa, this will represent a 42 per cent increase in population, while in Asia it will represent an increase of 12 per cent. Latin America and the Caribbean, Northern America, and Oceania will experience population growth of 14 per cent, 11 per cent and 21 per cent, respectively. The population of Europe, by contrast, is projected to decline slightly by 2030.

Figure II

Population of major areas of the world, selected years from 1990 to 2100



8. Looking beyond 2030, in the medium-variant projection the populations of Asia and of Latin America and the Caribbean are projected to peak sometime around 2060 and decline thereafter. The population of Africa is projected to continue to grow at a relatively rapid pace, more than doubling between 2030 and 2100. The populations of Northern America and Oceania are projected to continue to grow at a modest pace throughout the rest of the century, while declining population totals in Europe are projected to continue.

9. A major challenge for the 2030 Agenda is that much of the population growth between 2015 and 2030 will be concentrated in countries facing the largest gaps in fighting poverty and improving health and education. Population growth remains especially high in the group of 48 countries designated by the United Nations as the least developed countries, of which 27 are in Africa. Although the growth rate of the least developed countries is projected to slow from its current 2.4 per cent annually, the population of this group is projected to increase by nearly 40 per cent by 2030 (table 2). The population of the 31 low-income countries, as categorized by the World Bank in 2015, is projected to grow by 45 per cent between 2015 and 2030. In terms of sheer size, the lower-middle-income countries as a group will account for the largest increment. The population of this group of countries will grow by 616 million persons, an increase of 21 per cent between 2015 and 2030. The concentration of

population growth in the poorest countries will make it harder for those governments to eradicate poverty and inequality, combat hunger and malnutrition, expand education enrolment and health systems, improve the provision of basic services and implement other elements of a sustainable development agenda to ensure that no one is left behind.

Table 2
Population by development or income group, 1990-2030 (millions)

	1990	2015	2030
More developed regions	1 144	1 251	1 284
Less developed regions	4 165	6 098	7 217
Least developed countries	510	954	1 326
High-income countries	1 203	1 401	1 475
Upper-middle-income countries	1 881	2 390	2 567
Lower-middle-income countries	1 901	2 916	3 532
Low-income countries	323	639	924

Note: Income levels (per capita gross national income) are from World Bank (2015), *World Development Indicators*.

10. A small number of countries will account for a large proportion of global population growth between 2015 and 2030. Of the 1.2 billion persons to be added to the global population in the next 15 years, 50 per cent will live in just 9 countries: India, Nigeria, Pakistan, the Democratic Republic of the Congo, China, Ethiopia, Indonesia, United States of America and United Republic of Tanzania, listed in order of population increment by 2030.

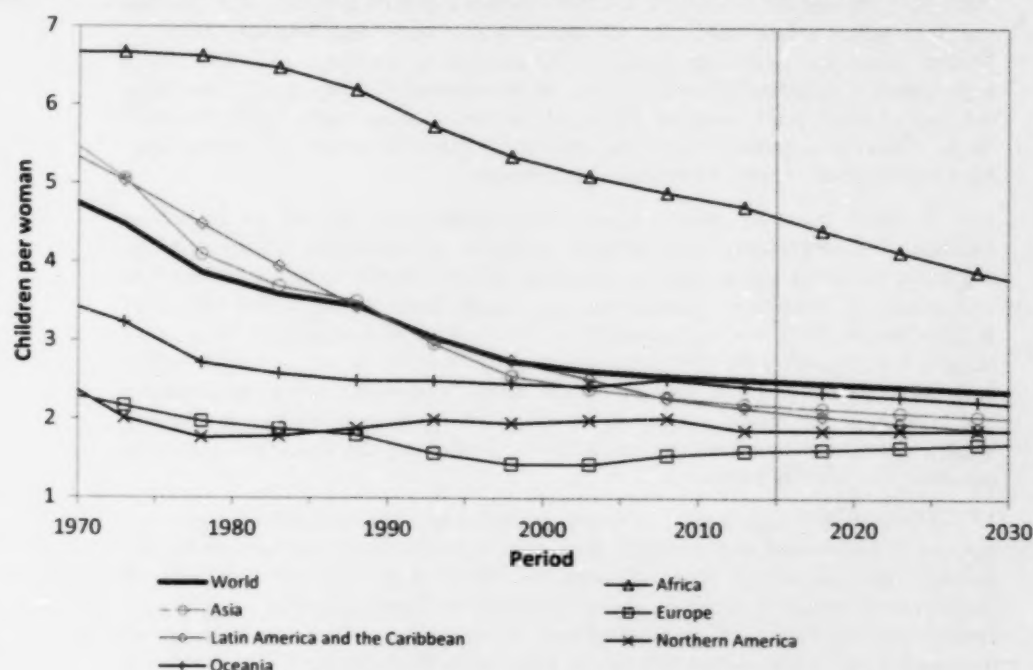
11. Growth trends will likely present the largest challenges in the countries with the largest relative population gains. There are 15 countries, nearly all in Africa, that are projected to experience greater than 50 per cent growth in their populations by 2030. At the other end of the spectrum, Japan, Lebanon and 12 European countries are projected to experience a reduction in population size of 5 per cent or greater between 2015 and 2030, typically due to low fertility combined with net out-migration or low levels of immigration.

III. Fertility and family planning

12. The world's level of total fertility has fallen from an average of 4.5 children per woman in 1970-1975 to 2.5 children per woman in 2010-2015. It is projected to reach 2.4 children per woman by 2025-2030 (figure III).

Figure III

Total fertility (children per woman) for the world and major areas, from 1970-1975 to 2025-2030



13. In the early 1970s, fertility was above four children per woman in most countries of Africa, Asia, Latin America and the Caribbean, and Oceania (figure IV). At that time, 70 per cent of the world's population lived in countries where women had four or more children on average; in 2010-2015, just 14 per cent of the world's population did so. Today, high fertility is found mainly in countries of sub-Saharan Africa, where fertility declines started from a higher initial level, began later and proceeded more slowly than in other areas. Of the 48 countries where fertility averaged four or more children per woman in 2010-2015, 40 were in sub-Saharan Africa, and most belonged to the group of least developed countries. Because of persistently high levels of fertility, these countries have a young age structure, and their populations are growing rapidly.

14. Many Governments, including most of those where fertility remains above four children per woman, regard their fertility level as being too high and have policies aimed at lowering it. In Africa, 83 per cent of countries had such policies in 2015, as did 38 per cent of those in Asia; 33 per cent, in Latin America and the Caribbean; and 56 per cent, in Oceania. All but one of the least developed countries had such policies.

15. While high fertility persists in some areas, a growing number of countries have reached levels of fertility that are below the threshold required for replacement of the population over time (that is, total fertility below 2.1 children per woman). In the early 1970s, fewer than one in five people worldwide lived in a country with below-replacement fertility; today, almost half of the world's population does so. In the

1970s, nearly all of the countries with below-replacement fertility were in Europe or Northern America, whereas the 83 countries with below-replacement fertility in 2010-2015 include 20 in Asia, 17 in Latin America and the Caribbean, 3 in Oceania and 1 in Africa (Mauritius), plus all countries of Europe and Northern America. Several countries, including Iran, the United Arab Emirates and Viet Nam, experienced exceptionally rapid declines in the national fertility level, from more than six children per woman in 1970-1975 to below-replacement levels in 2010-2015. Twenty-five countries or areas, almost all found in Europe or Eastern Asia, have fertility levels below 1.5 children per woman.

16. As more countries have reached below-replacement fertility, an increasing number of Governments have adopted policies to encourage higher fertility, motivated at least in part by concern about the society's ability to adjust to the speed and degree of population ageing that will result from sustained low levels of fertility. As of 2015, the Governments of 29 countries of Europe and 26 in other regions had policies aimed at increasing fertility. Policies to support work-family balance, in particular by helping parents to meet the everyday needs for childcare and to manage the multiple demands on their time through flexibility in working arrangements, may be effective approaches for addressing the social and economic causes of low fertility levels.

17. The increasing availability of family planning services has enabled a growing number of women and men to realize their right to decide freely and responsibly the number and spacing of their children. In 2015, more than 90 per cent of Governments provided direct or indirect support for family planning. Worldwide, current contraceptive use among married or in-union women aged 15 to 49 increased from 55 per cent in 1990 to 64 per cent in 2015 (figure V). By 2015, the average level of use was above 50 per cent in all regions except Eastern, Middle and Western Africa and Melanesia, Micronesia and Polynesia. Nine out of ten contraceptive users rely on methods of contraception that are known to be effective.

18. Because the proportion of women who want to stop or delay childbearing has also been increasing, the marked rise in the level of contraceptive use between 1990 and 2015 was not accompanied by an equal decline in the unmet need for family planning (figure V). An estimated twelve per cent of married or in-union women had an unmet need for family planning in 2015; that is, they were fecund and wanted to stop or delay childbearing but were not using any method of contraception. The average level of unmet need was just 3 percentage points lower in 2015 than in 1990. Among regions of the world, unmet need is highest in Eastern, Middle and Western Africa and in Melanesia, Micronesia and Polynesia. In three fourths of the countries in those regions, 20 per cent or more of married or in-union women had an unmet need for family planning in 2015. However, reducing the gap between contraceptive use and total demand is relevant for countries in all regions. Governments have agreed in SDG targets 3.7 and 5.6 to ensure universal access to sexual and reproductive health-care services, including for family planning, by 2030. These estimates for 2015 indicate the need for an accelerated investment in the provision of voluntary and high-quality family planning information, counselling and services.

Figure IV

Total fertility (children per woman) for countries or areas, 1970-1975 and 2010-2015

A. 1970-1975



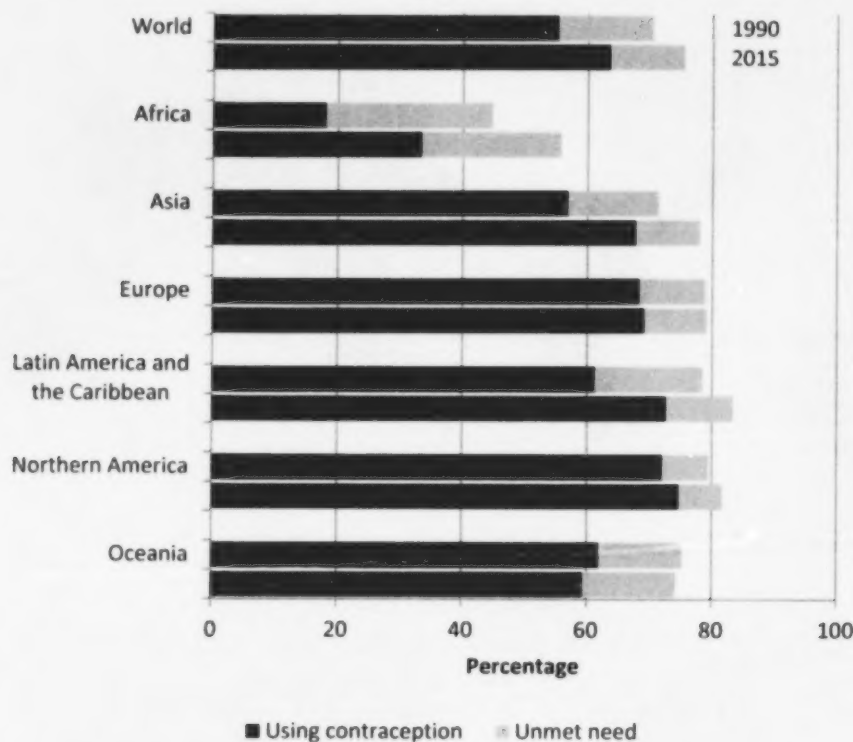
B. 2010-2015



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

Figure V
Levels of contraceptive use and unmet need for family planning for the world and major areas, 1990 and 2015

(Percentage of married or in-union women)



Note: The upper bar for each area shows data for 1990 and the lower bar shows data for 2015.

19. Despite their views regarding the level of total fertility, most Governments favour reducing the adolescent birth rate in their country. As of 2013, 90 per cent of Governments had adopted policies aimed at decreasing adolescent fertility. Childbearing during adolescence can have negative social and economic consequences for girls, especially if they drop out of school. Early childbearing also carries risks to the health of both mother and child. Pregnancy and childbirth complications are the second leading cause of death among women between the ages of 15 and 19 globally. Adolescent pregnancies are often unintended, and the level of unmet need for family planning is higher among sexually active adolescents than among older women. To counter these risks, adolescents need sexual and reproductive health-care services that are designed to meet their specific needs.

20. Adolescent fertility has declined nearly everywhere since the period 1990-1995. The global average adolescent birth rate (annual births per 1,000 women aged 15 to 19) was 65 in the early 1990s but declined to 46 by the period 2010-2015 (figure VI). The rate remains high in Africa, where 24 countries had an adolescent birth rate above 100 in the years 2010 to 2015. However, this is a reduction

compared to the period 1990-1995, when 41 countries had an adolescent birth rate in that range. Although the adolescent birth rate in Latin America and the Caribbean has declined significantly, the regional average remains relatively high, at 67 births per thousand women aged 15 to 19 during the years 2010-2015. In contrast, for all countries in Europe and North America and for the vast majority in Asia and Oceania, the adolescent birth rate was below 50 in the period 2010-2015. Based on past trends, the United Nations has projected further declines between the years 2010-2015 and 2025-2030. However, the prospects for this continued decline will depend on investments in girls' education and expanded access to information, education and services in the area of sexual and reproductive health.

21. Most countries have also experienced declines in the proportion of adolescents who are married or in a union, with Africa and Asia showing the largest decreases in this proportion between 1990 and 2015. However, the prevalence of early union formation has hardly changed in Latin America and the Caribbean. Adolescent marriage and union formation is now more common there than in all other major areas of the world except Africa (figure VII).

Figure VI

Adolescent fertility for the world and major areas, 1990-1995 and 2010-2015

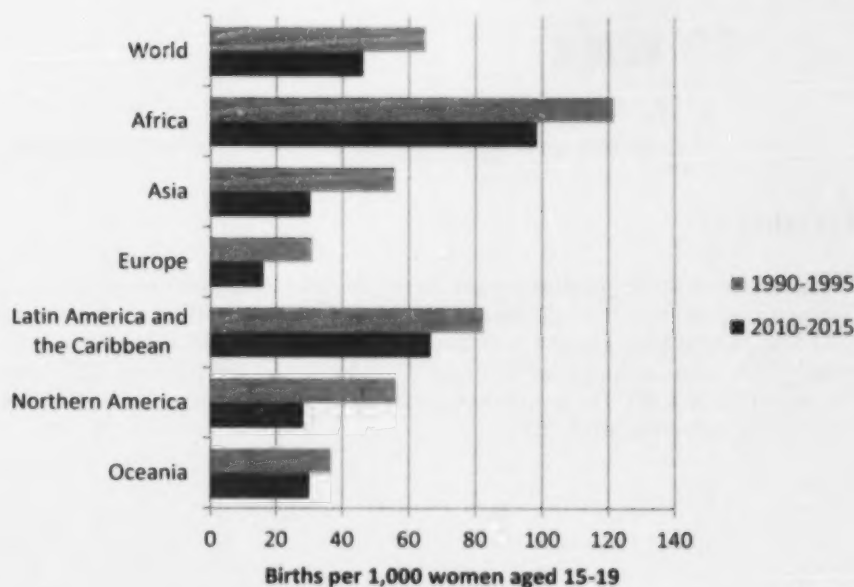
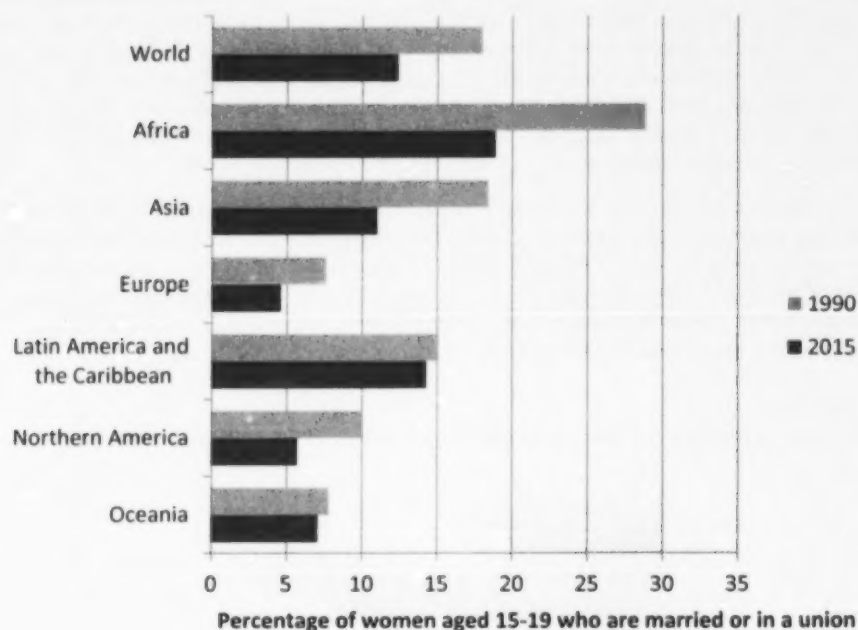


Figure VII

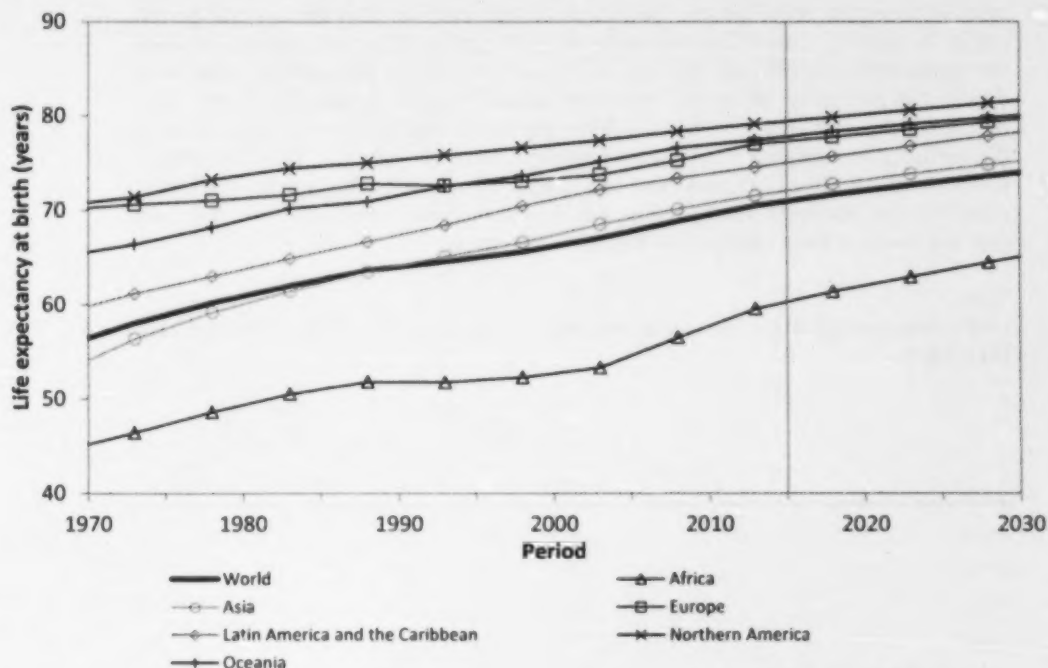
Percentage of women aged 15-19 years who are married or in a union for the world and major areas, 1990 and 2015



IV. Mortality

22. Sustained mortality declines began in the late nineteenth century in the more developed regions, but they accelerated and spread globally following the Second World War. Global life expectancy at birth has risen by 23 years since 1950-1955, reaching 70.5 years in the period 2010-2015, or 68.2 years for men and 72.7 years for women (figure VIII). The world average for life expectancy is projected to reach 73.7 years by the period 2025-2030.

Figure VIII
Life expectancy at birth for the world and major areas, from 1970-1975 to 2025-2030



23. The highest life expectancies today exceed 80 years. In the early 1990s, no country had achieved a life expectancy that high, while today 33 countries or areas have reached or surpassed that threshold, led by Hong Kong Special Administrative Region of China (83.7 years) and Japan (83.3 years). However, 77 countries or areas have still not reached a life expectancy of 70 years, and in 27 of them life expectancy is below 60 years.

24. Although life expectancy has risen nearly everywhere since the 1970s, progress lagged in Africa during the 1980s and 1990s, and life expectancy declined in the countries most affected by the HIV/AIDS epidemic, reversing some gains of the past. More recently, with the expanded availability of antiretroviral treatment, HIV/AIDS-related mortality appears to have passed a peak in most of those countries, and African life expectancy rose by about 6 years between 2000 and 2005 and 2010 and 2015. However, it remains 12 to 18 years lower in Africa than in other major areas (figure VIII). Of the 27 countries with life expectancy below 60 years in the period 2010-2015, only one (Afghanistan) is outside Africa. Life expectancy is below 50 years in three countries (Central African Republic, Lesotho and Swaziland) mainly because of the impact of HIV/AIDS.

25. In the early stages of the transition towards lower levels of mortality, reductions in the risk of death occur mainly among young children. High infant and child mortality is due largely to the high incidence and fatality of communicable diseases. Reducing mortality from these diseases depends largely on improvements in sanitation, nutrition and health technologies such as vaccines. Between 1990 and

1995 and 2010 and 2015, under-five mortality — the probability of dying between birth and a child's fifth birthday — declined by 45 per cent worldwide. While the absolute change was greatest in Africa, all major areas showed large declines in relative terms. In Asia and Europe, the level fell by over half during this period (table 3). Notably, under-five mortality declined substantially more rapidly between the years 1990 to 1995 and 2010 to 2015, at a pace of 3.0 per cent per year, than during the preceding 20 years, when the annual decline averaged 2.1 per cent. Africa and Asia showed substantially faster decline in the more recent period than in the earlier. Although the Millennium Development Goal target of reducing under-five mortality by two thirds between 1990 and 2015 was not achieved, the concerted efforts of Governments, civil society and the international community to reach that goal are likely to have accelerated the pace of progress.

Table 3

Under-five mortality for the world and major areas, in 1970-1975, 1990-1995 and 2010-2015

	<i>Under-five mortality (per 1,000 births)</i>			<i>Annual decrease (in percentage)</i>	
	<i>1970- 1975</i>	<i>1990- 1995</i>	<i>2010- 2015</i>	<i>1970-1975 to 1990-1995</i>	<i>1990-1995 to 2010-2015</i>
World	139	91	50	2.1	3.0
Africa	220	167	90	1.4	3.1
Asia	144	83	39	2.7	3.8
Europe	29	15	6	3.2	4.4
Latin America and the Caribbean	112	49	26	4.1	3.2
Northern America	21	10	7	3.6	2.0
Oceania	59	38	26	2.2	1.9

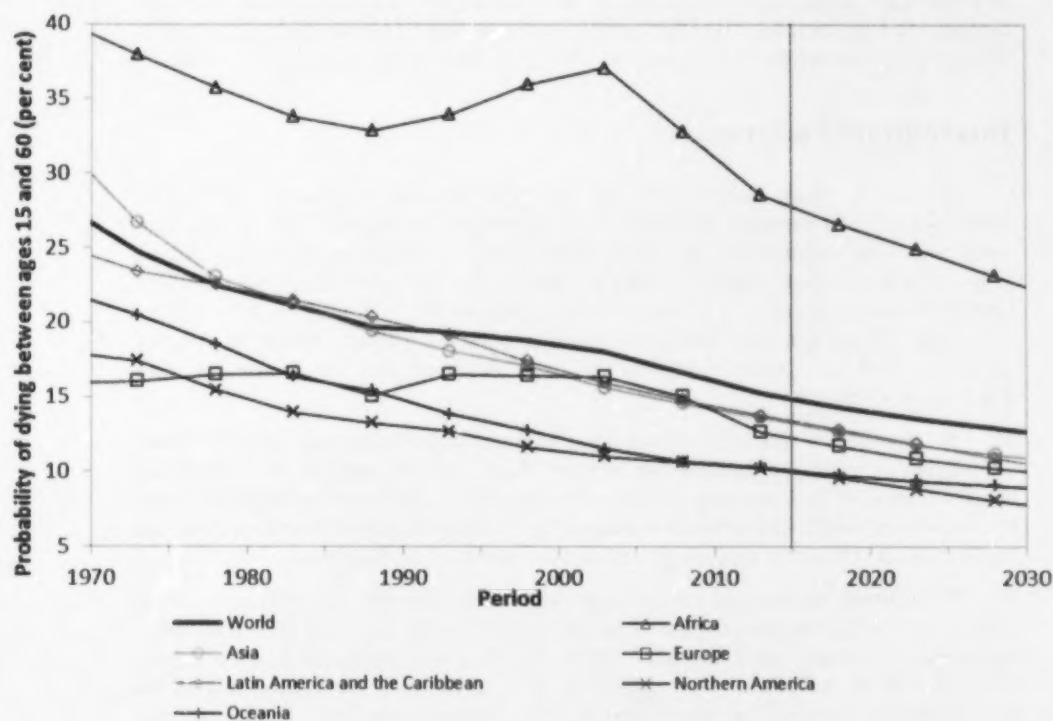
26. The Sustainable Development Goals include target 3.2, which specifies that all countries should aim to reduce under-five mortality to no more than 25 deaths below age 5 per 1,000 live births by 2030. The latest mortality projections from the United Nations suggest that the desired level will be reached or surpassed by 2025-2030 in all major areas of the world except Africa, where the extrapolation of past trends suggests that the rate may remain above 60 deaths per 1,000 live births in the years 2025-2030. In fact, there are 66 countries, including 46 in Africa, 11 in Asia, 5 in Latin America and the Caribbean, and 4 in Oceania, where the currently projected trends fall short of the target, suggesting the need for significant additional resources and effort in order to accelerate the future decline and attain the desired reduction in child mortality by 2030.

27. Once mortality from communicable diseases declines to low levels, further reductions in mortality depend largely on mitigating the effects of non-communicable diseases, such as cardiovascular and respiratory diseases, cancers and diabetes, which affect mainly adults. However, in many countries adults continue to face high levels of risk from both communicable and non-communicable diseases. Accordingly, the Sustainable Development Goals call for ending the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases (target 3.3) and for reducing premature mortality from non-communicable diseases (target 3.4).

28. The probability of dying between the ages of 15 and 60 is a summary measure of mortality risks during the reproductive and working ages. While mortality at these ages has fallen substantially in most areas since the 1970s, the pace of progress has been much slower than for childhood mortality. Globally in the period 2010-2015, the chance that a person turning age 15 would die before reaching age 60 was around 15 per cent (figure IX). The risk was lowest, at about 10 per cent, in Northern America and Oceania and was about 13 to 14 per cent in Asia, Europe and Latin America and the Caribbean. In Africa this probability was about 29 per cent, over twice as high as in any other major area of the world. In Africa, mortality at ages 15 to 60 rose after 1985 as the HIV/AIDS epidemic worsened. With the increased availability of antiretroviral drugs, survival prospects in Africa have begun improving again. However, the world is still far from ending the AIDS epidemic and conquering other communicable diseases that contribute to Africa's excess mortality in comparison to other areas.

Figure IX

Probability of dying between ages 15 and 60 for the world and major areas, from 1970-1975 to 2025-2030



29. Globally, the maternal mortality ratio (MMR) fell by 44 per cent between 1990 and 2015, reaching 216 maternal deaths per 100,000 live births in 2015.¹

¹ See *Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division* (WHO, 2015, Geneva).

Approximately 303,000 women died from maternal causes in 2015, compared to an estimated 532,000 in 1990. Although all developing regions have experienced substantial reductions in maternal mortality, few countries reached the Millennium Development Goal of reducing MMR by 75 per cent between 1990 and 2015. In sub-Saharan Africa, MMR remains above 500 maternal deaths per 100,000 live births, far higher than in other areas. The level of the MMR is also relatively high — between 100 and 200 — in the Caribbean, in Oceania and in South-eastern and Southern Asia. Greatly accelerated progress will be needed for the world to reach Sustainable Development Goal target 3.1 of reducing the MMR to less than 70 by 2030.

30. Old-age mortality is commonly measured by the life expectancy at age 60. In the period 2010-2015, the average person turning age 60 could expect to live an additional 20.2 years, to reach age 80.2. For women, life expectancy at age 60 is 21.5 years and for men, 18.7 years. These are global averages, however, and disparities among the major areas follow a pattern similar to the survival disparities observed at younger ages. Life expectancy at age 60 is highest (about 22 to 24 years) in Europe, Latin America and the Caribbean, Northern America and Oceania; it is about 19 years in Asia and is lowest, at about 17 years, in Africa. Survival prospects at older ages have been improving in most countries, including those with the highest life expectancies. Over the next 15 years, global life expectancy at age 60 is projected to increase by over a year, to reach 21.6 years in the period 2025-2030.

V. International migration

31. In 2015, there were 244 million international migrants worldwide. Approximately 48 per cent of international migrants were women, and 52 per cent were men. The majority (72 per cent) of international migrants were aged 20-64 years, 15 per cent were under 20 years old and 13 per cent were 65 or older. Europe hosted the largest number of international migrants in 2015, 76 million, followed by Asia with 75 million and Northern America with 54 million. Some 21 million migrants lived in Africa, 9 million in Latin America and the Caribbean, and 8 million in Oceania.

32. Between 2000 and 2015, the number of international migrants grew by about 71 million, or nearly 5 million per annum. Asia, Europe and Northern America absorbed most of this increase. In Asia, the number of international migrants grew by 26 million, while in Europe it increased by 20 million and in Northern America by 14 million. The other regions gained smaller numbers of migrants.

33. The growth in the number of migrants worldwide was due primarily to an increase in the number of migrants from countries of Asia. Between 2000 and 2015, the number of international migrants originating from Asia increased by 54 per cent, from 65 million in 2000 to 100 million in 2015, accounting for nearly half of the total increase. During the same period, the increase was also significant for international migrants originating from Africa (11 million), Latin America and the Caribbean (11 million), and Europe (10 million).

34. At the end of 2014, the number of refugees globally reached about 19.5 million.² According to the United Nations High Commissioner for Refugees,

² UNHCR, *Global Trends 2014: Enforced Displacement in 2014* (Geneva, 2015).

the largest numbers of refugees originated from the Syrian Arab Republic (3.9 million), Afghanistan (2.6 million) and Somalia (1.1 million). Lebanon hosted the largest number of refugees in relation to its population size.

35. Migrants made up 3.3 per cent of the global population in 2015, compared to 2.8 per cent in 2000. There were, however, considerable regional differences in the proportion of international migrants in the total population. In Europe, Northern America and Oceania, international migrants accounted for at least 10 per cent of the population, whereas in Africa, Asia and Latin America and the Caribbean they made up less than 2 per cent.

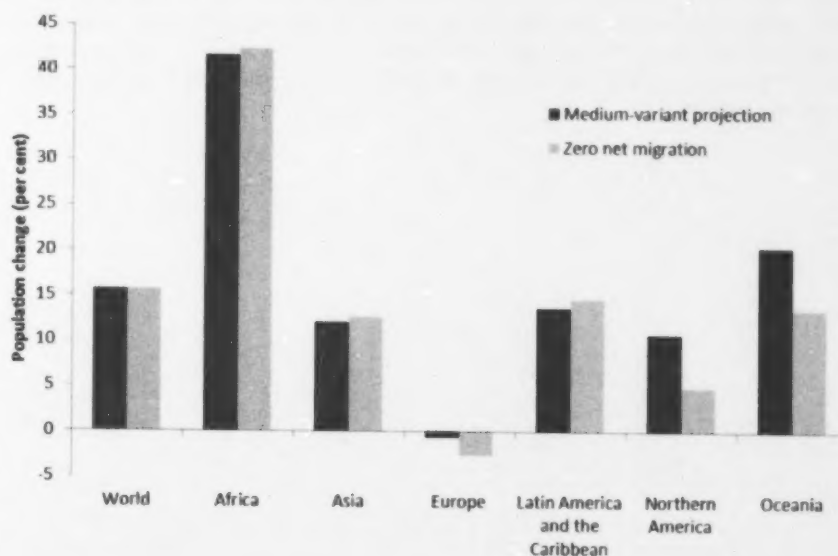
36. In many parts of the world, international migration has contributed to sustaining population growth. Between 2000 and 2015, the net inflow of migrants accounted for 42 per cent of the population growth in Northern America and 32 per cent in Oceania. In Europe the size of the population would have declined between 2000 and 2015 in the absence of international migration. In Africa, Asia, and Latin America and the Caribbean, outmigration accounted for the slight slowing in the magnitude of population growth.

37. Looking ahead, international migration is projected to make a significant impact on changes in the size of the total population in Europe, Northern America and Oceania between 2015 and 2030. Figure X compares population growth in the medium-variant projection to a scenario in which the flow of immigrants and emigrants for each country balances to zero after 2015. In Europe, although a continuation of recent levels of migration would not be enough to compensate for the surplus of deaths over births, population decline would be more pronounced, and would start earlier, under the scenario of zero net migration.

Figure X

Projected effect of net migration on the change in population size from 2015 to 2030, for major areas of the world

(Percentage of 2015 population)



38. Although international migration will not halt the long-term trend towards population ageing, net positive levels of migration can slow the increase in old-age dependency ratios. International migration can also help in meeting domestic labour market demands, because international migrants tend to include a larger proportion of working-age persons than the overall population. For instance, in Europe, the old-age dependency ratio, measured as the number of persons aged 65 or over per 100 persons aged 15 to 64, is projected to be 3 points lower in 2050 than if there were zero net migration after 2015 (51 vs. 48 older persons per 100 of working age). In Northern America the ratio would be 5 points lower without international migration and in Oceania it would be 4 points lower.

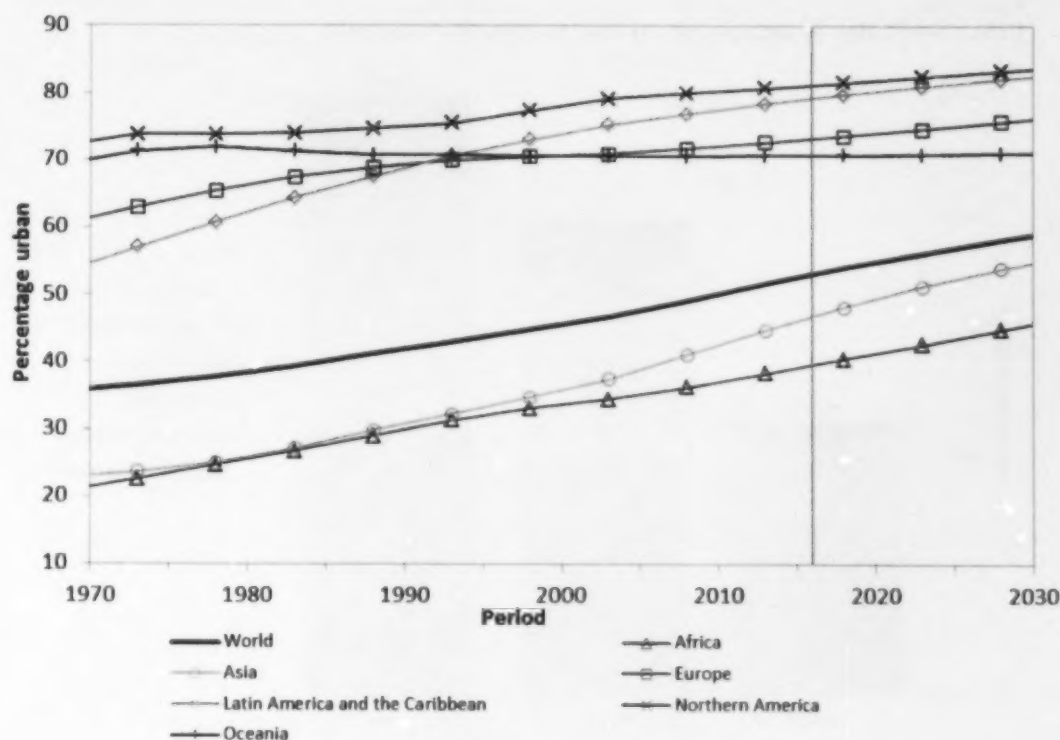
39. The 2030 Agenda for Sustainable Development recognizes the positive contributions of migrants to the development of societies of origin and destination. Further, it recognizes the collective responsibility to ensure that the rights of migrants are fully respected and upheld. The 2030 Agenda's Sustainable Development Goals include targets to promote safe, orderly and regular migration, to fight human trafficking, and to facilitate the transfer of remittances. Other goals address some of the key root causes of involuntary, irregular and forced migration, including poverty, inequality and insecurity.

VI. Urbanization

40. A growing proportion of humanity is concentrated in urban settlements, and virtually all of the future growth of the world's population will take place in cities. The share of the world's population living in urban areas is projected to increase from 54 per cent in 2015 to 60 per cent in 2030 (figure XI). Northern America was the most urbanized region of the world in 2015, with 82 per cent of the population concentrated in urban settlements, followed by Latin America and the Caribbean (80 per cent) and Europe (74 per cent). While Africa and Asia remained mostly rural in 2015, with 40 per cent and 48 per cent of their respective populations living in urban areas, these regions are currently urbanizing much faster than the rest. By 2030, urban settlements are projected to house 47 per cent of Africa's population, 56 per cent of Asia's, 71 per cent of Oceania's, 77 per cent of Europe's and more than 80 per cent of the populations of Latin America and the Caribbean and of Northern America.

Figure XI

Proportion of total population residing in urban areas for the world and major areas, from 1970 to 2030



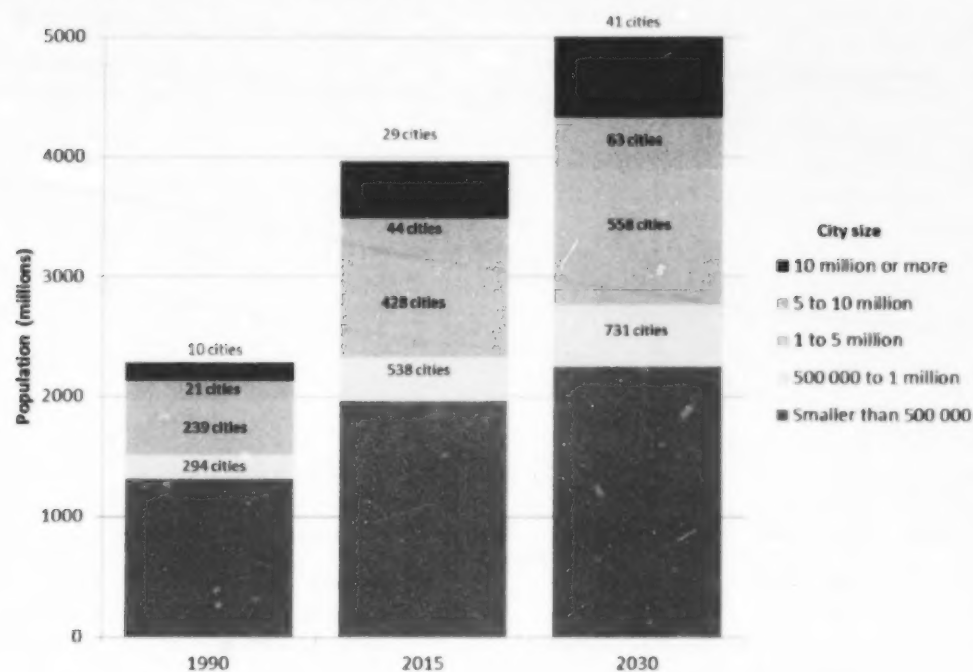
41. As the global urban population has grown, so too has the number of cities and the population of most cities. In 1950, only two urban agglomerations, New York-Newark and Tokyo, were "megacities", with more than 10 million inhabitants. Together, they accounted for just 3 per cent of the global urban population. By 2015 the number of megacities had grown to 29 and, as a group, they contained 12 per cent of the global urban population. By 2030 the number of cities with at least 10 million inhabitants is projected to increase to 41, and 14 per cent of urban dwellers worldwide will live in megacities (figure XII).

42. However, in 2015, most (59 per cent) of the world's urban dwellers lived in cities with fewer than 1 million inhabitants. In fact, urban population growth has been propelled by the growth of cities of all sizes. The number of large cities — those with 5 to 10 million inhabitants — more than doubled over the past 25 years, from 21 in 1990 to 44 in 2015, and projections indicate that there will be 63 cities with 5 to 10 million inhabitants in 2030. The number of medium-sized cities with 1 to 5 million inhabitants, and of smaller cities with fewer than 1 million inhabitants, has increased significantly as well. With continued city growth and urbanization, the proportion of the world's population that is concentrated in smaller cities has been declining: in 1950, 75 per cent of the world's urban dwellers lived in cities with

fewer than 1 million inhabitants, but projections suggest that by 2030 such smaller cities will account for about 55 per cent of the global urban population.

Figure XII

Urban population by category of city size, in 1990, 2015 and 2030



43. Urbanization has generally been a positive force for economic development and poverty reduction. Cities concentrate the large and diverse pools of labour that are needed for sustained economic growth. The density of people and businesses in cities facilitates knowledge and information-sharing, fostering new enterprises and technological innovation. As hubs of commerce, government, and transportation, cities provide crucial links to rural areas, with other cities, and across international borders. Approximately 80 per cent of global gross domestic product is generated in cities.³

44. With sufficient planning and institutional capacity, Governments are able to take advantage of urban economies of scale to provide infrastructure such as roads, piped water and electricity, as well as basic services such as education and health care, to a large population at much lower costs than would be required for the same number of people dispersed over rural areas. Urban living is often associated with higher levels of literacy and education, women's status and labour force participation, as well as better health, greater access to social services, and enhanced opportunities for cultural and political participation.

³ IPCC, 2014: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2015).

45. Nevertheless, rapid and unplanned urban growth threatens sustainable development when the necessary infrastructure is not developed or when policies are not implemented to ensure that the benefits of city life are equitably shared. In 2014, more than 880 million people, representing 30 per cent of urban residents in developing regions, lived in slums or informal settlements, characterized by inadequate, overcrowded housing, or lacking access to improved water and sanitation or security against eviction.⁴ Although the proportion of urban residents in developing countries living in slums has fallen from 39 per cent in 2000 to 30 per cent in 2014, the number of people living in slums continues to grow owing to ongoing urbanization.

46. The future growth of cities and concomitant appropriation of land and natural resources will shape the prospects for an environmentally sustainable future. In some cities, unplanned or inadequately managed urban expansion leads to sprawl, pollution and environmental degradation. Today's cities are growing twice as fast in terms of land area as they are in terms of population.³ Such urban expansion is associated with an increased use of automobiles and, in some areas, contributes to deforestation and risks destroying habitats.

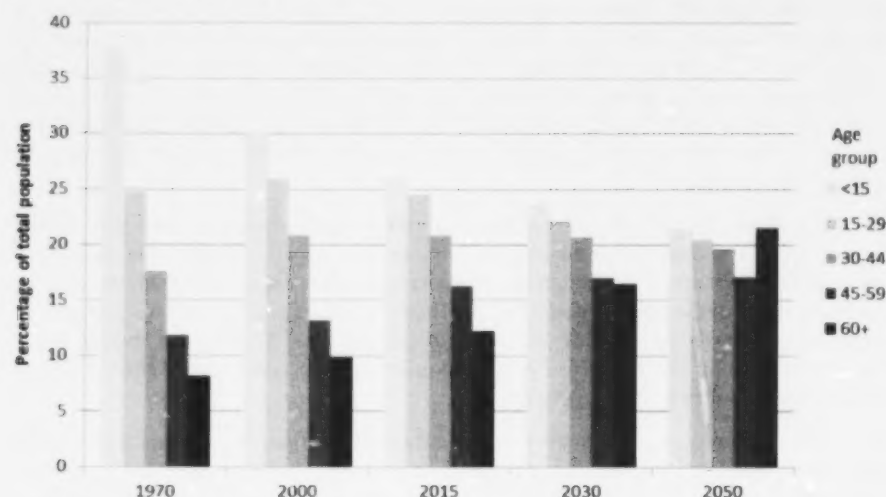
47. Government policies for planning and managing urban growth can help ensure that the benefits are shared equitably and sustainably. Policies that aim to restrict rural-urban migration are largely ineffective at forestalling city growth and can even result in economic, social and environmental harm. Sustainable urbanization requires that cities generate better income and employment opportunities; expand the necessary infrastructure for water and sanitation, energy, transportation and communication; ensure equitable access to services; reduce the number of people living in slums; and preserve the natural assets within the city and surrounding areas.

VII. Changing population age structures and population ageing

48. The world is going through a long-term transformation towards an older population age structure (figure XIII). Countries began this process at different times and are proceeding through it at varying speeds, depending mainly on the timing and pace of the decline in fertility. In the decades after the start of a sustained fertility decline, the relative proportions of working-age adults and older persons both rise as the proportion of children declines.

⁴ United Nations (2015). *The Millennium Development Goals Report 2015*.

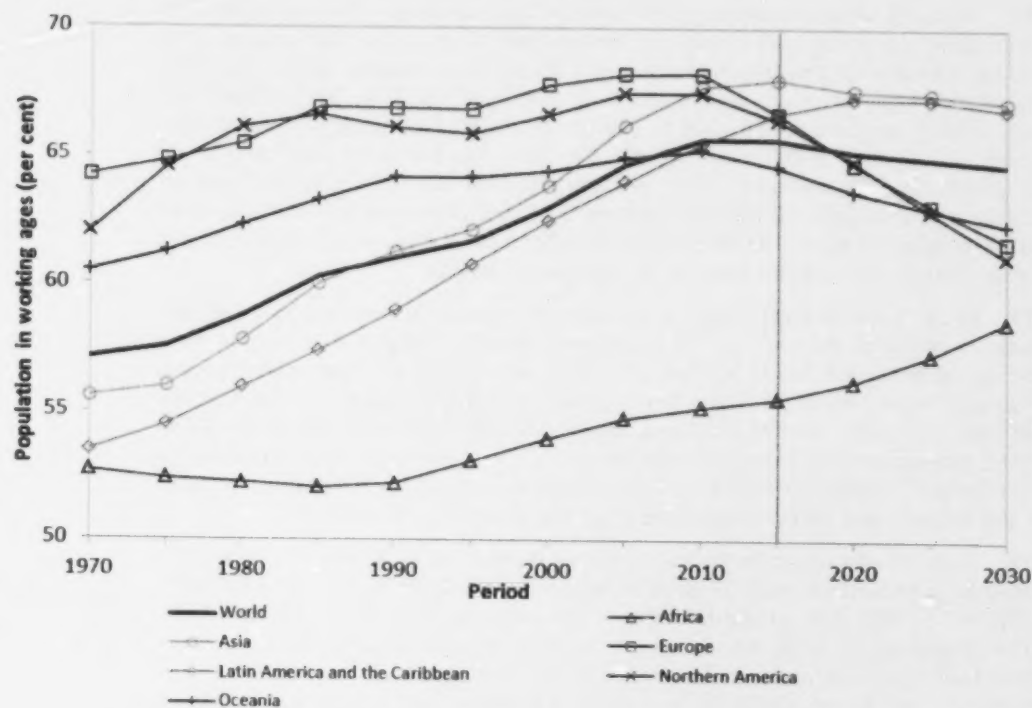
Figure XIII
 Percentage distribution of the global population by broad age groups, selected years from 1970 to 2050



49. In all areas of the world, people of working age (ages 15-64) made up a higher proportion of the population in 2015 than in 1970 (figure XIV). In Asia, the proportion increased by 12 percentage points (from 56 to 68 per cent), and in Latin America and the Caribbean it rose by 13 percentage points. In other areas the increases were much smaller. In Africa, the proportion of people of working age began rising only in about 1990, and by 2015 it was still much lower (at 56 per cent of the total population) than in other major areas (ranging from 65 to 68 per cent). Many countries will experience further increases in the proportion of persons of working age between 2015 and 2030, while others have already reached the peak proportion or will do so between 2015 and 2030. In Asia and in Latin America and the Caribbean, the proportion of the population of working age will be near its peak level throughout this period. In Europe, Northern America and Oceania, this proportion has already passed the peak level, and it is projected to decline between 2015 and 2030 by 5 percentage points in Europe and Northern America and by 2 points in Oceania. There is wide variation in this regard among countries within these regions. For instance, in four Asian countries the proportion of persons of working age is projected to increase by over 5 percentage points between 2015 and 2030, whereas it will decline by 5 points or more in nine countries or areas of the same region (including the largest, China).

Figure XIV

Working-age population (ages 15-64) as a percentage of the total for the world and major areas, from 1970 to 2030



50. The period of rising proportions of people of working age has been called a "demographic window of opportunity" or "demographic dividend". Provided that the economy generates decent jobs for the growing number of workers, an increasing ratio of workers to dependants provides a boost to income per capita and can potentially free up resources for investment that will foster sustainable development and lead to higher living standards over the long term. Even after the working-age proportion passes its peak, it usually remains substantially above historical levels for an extended period, a demographic situation that is still relatively favourable for sustained investment in human and physical capital. Moreover, the expectation of longer lives may prompt the accumulation of assets to support consumption during retirement, building the overall level of wealth in a population. These benefits are not guaranteed, but can arise if societies take advantage of the period when the proportion of workers is rising, or is still relatively high, to save and invest in ways that promote sustained economic growth and sustainable development. Investments in health, education and employment opportunities for young people are key measures to maximize the economic benefits of changing dependency ratios.

51. During the period from 2015 to 2030, a large majority of countries in Asia, Oceania, and Latin America and the Caribbean will be in stages of the demographic transition that are the most favourable for realizing the benefits of rising or still-

high proportions in the working ages. Most countries in Africa during this period will still be in the early stages of this process, whereas the majority of high-income countries are already in the more advanced stages characterized by population ageing.

52. Globally, older persons (aged 60 years or over) constitute the fastest growing population age group, and nearly everywhere their share of the total population is rising. Virtually all countries will experience a substantial increase in the size of the population aged 60 years or over between 2015 and 2030. In 2015, there were 901 million persons aged 60 years or over in the world. That number is projected to grow to 1.4 billion in 2030 and 2.1 billion by 2050. Growth in the older population is projected to be especially rapid in Latin America and the Caribbean, with an increase of more than 70 per cent between 2015 and 2030, and in Africa and Asia, with increases of more than 60 per cent. In other areas the increase in numbers will range from 23 per cent in Europe to 47 per cent in Oceania.

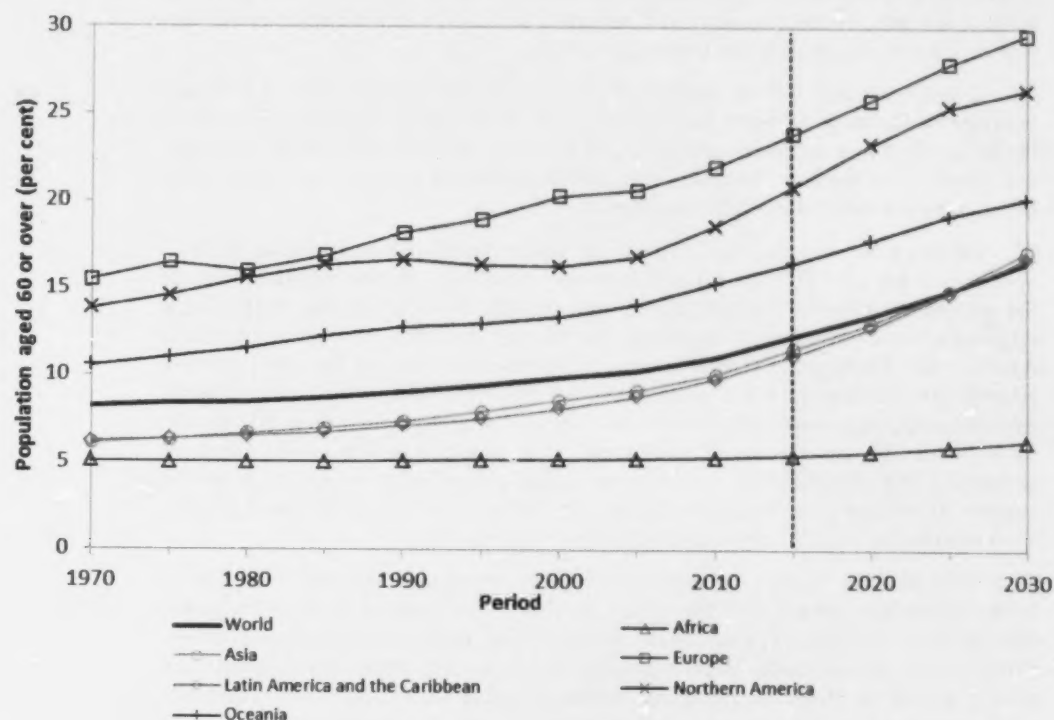
53. In 2015, one in eight people worldwide was aged 60 or over, and by 2030, that ratio is projected to reach one in six people globally. Population ageing is most advanced in Europe and in Northern America, where more than one in five people was aged 60 or over in 2015, while the proportion is rising rapidly in Latin America and the Caribbean, Asia and Oceania, though starting from lower levels. By 2030, older persons are expected to account for more than 25 per cent of the population in Europe and in Northern America, 20 per cent in Oceania, 17 per cent in Asia and in Latin America and the Caribbean, and 6 per cent in Africa (figure XV).

54. High-income countries tend to be the most aged. Japan is home to the world's most aged population, with 33 per cent of persons aged 60 years or over in 2015, followed by Italy (29 per cent), Germany (28 per cent), and Finland (27 per cent). The proportion of older persons was also high in several upper-middle-income European countries, such as Bulgaria (27 per cent aged 60 or over in 2015), Romania and Serbia (both 24 per cent). Comparatively young age structures prevailed among countries at the lower end of the income distribution: in nearly every low-income country and in about 85 per cent of lower-middle-income countries in 2015, fewer than 1 in 10 people was aged 60 or over.

55. Over the next 15 years, several upper-middle-income countries are projected to become as aged as today's high-income countries. For example, between 2015 and 2030 the share of people aged 60 years or over is projected to increase from 15 to 25 per cent in China, from 16 to 27 per cent in Thailand and from 19 to 32 per cent in Cuba. Some lower-middle-income countries are projected to age rapidly as well. For example, the proportion of older people is projected to increase from 14 to 21 per cent in Sri Lanka, from 10 to 18 per cent in Viet Nam, and from 10 to 15 per cent in Morocco. In most low-income and lower-middle-income countries, however, the share of older persons is projected to remain below 10 per cent through 2030.

Figure XV

Percentage of the population aged 60 years or over for the world and major areas, from 1970 to 2030



VIII. Conclusions

56. The global population numbered 7.3 billion in 2015 and is currently growing at 1.2 per cent per year. It is projected to reach 8.5 billion in 2030. According to the medium-variant projection of the United Nations, population will continue to increase during the rest of the century, reaching 11.2 billion in 2100. Most of the population growth between 2015 and 2030 will occur in Africa and Asia. A challenge for the 2030 Agenda for Sustainable Development is that much of this population growth will be concentrated in countries facing the largest gaps in ending poverty and hunger and ensuring health, education and equality for all. Population growth remains especially rapid in the 48 least developed countries, of which 27 are in Africa.

57. Today, most of the countries with high fertility (four or more children per woman) are in sub-Saharan Africa. These countries have young populations that are growing rapidly. At the other extreme, 83 countries had below-replacement fertility (below 2.1 children per woman) in the period 2010-2015. Countries with sustained below-replacement fertility will experience rapid ageing of their populations during the period 2015-2030.

58. The level of unmet need for family planning has decreased in most regions of the world since 1990. However, 12 per cent of married or in-union women still had an unmet need for family planning in 2015, and the level is much higher in Africa. Accelerated investment in providing information and services will be needed to achieve the goal of ensuring universal access to sexual and reproductive health-care services, including for family planning, by 2030.

59. Life expectancy at birth reached 70 years in the period from 2010 to 2015 and is projected to rise to 74 years by 2025-2030. There has been substantial progress in lowering child and maternal mortality and in combating the HIV/AIDS epidemic, but efforts will need to be sustained and strengthened to meet the Sustainable Development Goals for mortality and health.

60. International migrants made up 3.3 per cent of the world's population in 2015, up from 2.8 per cent in 2000. Asia, Europe and Northern America absorbed most of the increase in migrant numbers during that period. In some regions, international migration has contributed to sustaining population growth. In adopting the 2030 Agenda for Sustainable Development, Governments recognized the positive contribution of migrants for sustainable development and agreed to cooperate internationally to ensure safe, orderly and regular migration involving full respect for human rights and the humane treatment of all migrants, refugees and displaced persons. These commitments are already being tested by a recent surge in the number of refugees. In September 2016, the General Assembly will hold a high-level meeting to address large-scale population movements.

61. Over half the world's population now lives in urban areas, and nearly all of future population growth will take place in cities. The number of large cities has been growing rapidly, and they house an increasing proportion of urban dwellers. Urbanization has generally been a positive force for economic development and poverty reduction. However, rapid and unplanned urban growth threatens sustainable development when the necessary infrastructure is not developed, or when urban growth leads to the expansion of slums, urban sprawl, pollution and environmental degradation.

62. A rising share of workers in the population provides a "demographic window of opportunity" for sustained economic growth and sustainable development. In all of the world's major areas, the share of working-age people in the total population was higher in 2015 than in 1970. Many countries, including a growing number in Africa, will experience further increases in that proportion between 2015 and 2030. Others have already reached the peak proportion or will do so by 2030. Policies to develop human capital, provide decent jobs and promote savings and investment will enable countries to benefit while the working-age proportion is rising or still high, and to adjust to the subsequent period characterized by population ageing.

63. In 2015, persons aged 60 or over made up 12 per cent of the global population, and by 2030, this will increase to 16 per cent. Population ageing is most advanced in Europe and in Northern America, while ageing is progressing rapidly in Latin America and the Caribbean, Asia and Oceania, though starting from lower levels. By 2030, older persons are expected to account for more than 25 per cent of the population in Europe and in Northern America, 20 per cent in Oceania, 17 per cent in Asia and in Latin America and the Caribbean, and 6 per cent in Africa.

64. Demographic changes over the next 15 years will help to shape the implementation of the 2030 Agenda for Sustainable Development. Countries will be implementing the 2030 Agenda from very different starting points regarding levels of fertility, mortality and urbanization. They will experience widely differing rates of growth for their populations of children entering school, of young people entering the labour force and beginning their reproductive years, and of persons entering the older age range and eventually needing support of various kinds. National strategies will need to take account of these demographic realities, which will partially determine the resources required to achieve the goals and targets of the 2030 Agenda.